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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."

Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

COUNTY BOROUGH OF WEST HAM.

Tenders for Uniform Clothing.

The Council hereby invite Tenders for the Supply of Uniform Clothing for

(*a*) Tramways Department.

(*b*) Fire Brigade and General Uniforms.

Forms of tender and further particulars may be obtained from, and also standard samples seen at, the Tramway offices, Greengate Street, Plaistow, E.13, in respect of Tramway Clothing, and the Borough Engineer's Office, Town Hall, West Ham, E., for the Fire Brigade and General Clothing, between the hours of 10 a.m. and 4 p.m. (Saturdays excepted).

A deposit of £1 will be required in respect of each form of tender, which will be returned on receipt of a bona-fide tender.

No tender will be considered unless the same is delivered at the Office of the Town Clerk, Town Hall, West Ham, E., in the envelope supplied, by registered post, not later than 9 a.m. on Tuesday, January 22, 1918.

The Council do not bind themselves to accept the lowest or any tender. The contractor will be required to enter into a bond, with sureties, for the due performance of the contract, and no goods, materials, etc., will be ordered under the contract until such bond has been duly executed.

The contractor whose tender is accepted, and with whom a contract is entered into, will be required to pay to the whole of his workmen such rate of wages, and observe such hours of labour as are recognised by the Workmen's Trade Unions, and in force at the time of signing the contract. In the event of any breach of such agreement the Council will enforce the penalty clause in its entirety.

By order of the Council,

GEORGE E HILLEARY,
Town Clerk.

Town Hall,
West Ham, E.
January 3, 1918.

CITY OF BIRMINGHAM.

The Public Works Committee are prepared to receive Tenders for the Supply of Materials for one year, ending March 31st, 1919, viz.: Granite Kerbs, Setts, Crossing Stones, Chippings, Flags, Paving Bricks, Wood Paving Blocks, Ragstone, Limestone, Tarred Limestone, Tarred Roadstone, Gravel, Sand, Slag, Lias Lime, Portland Cement, and Stoneware Pipes.

Forms of Tender, copies of conditions, and specifications may be obtained on and after the 1st inst., at the City Surveyor's Office, Council House, Birmingham, on payment of £1 for each copy, which will be returned on the receipt of a bona fide Tender, for the whole or any portion of the materials required. Samples of materials tendered for must be sent, carriage paid, to the undersigned. Tenders must be made out on the forms provided, and delivered at the undermentioned Offices on the 19th day of January, 1918, endorsed "Tender for Paving Materials, &c.," and addressed to the City Surveyor, Council House, Birmingham. The person whose Tender may be accepted will be required to conform with the provisions of the Trade Board's Act, 1909, and to provide approved sureties in sums of £300 each for the due performance of the contract. The Committee do not pledge themselves to accept the lowest or any Tender, and reserve the right to accept portions only of Tender.

HENRY E. STILGOE,
City Engineer and Surveyor.

The Council House, Birmingham, 1st January, 1918.

POSITIONS VACANT.

FOREMAN PLATELAYER.

Wanted, for a Tramway System, comprising 10 miles of single track, an experienced Foreman Platelayer.

Applicants must have had a wide experience in both Constructional and Maintenance work of the most modern type. Apply, stating age, present employment, previous experience, and wages required, to The BOROUGH ENGINEER, Guildhall, Swansea.

SUB-STATION ATTENDANT WANTED.

Sub-Station Attendant, with experience of Rotary Converters, Motor Generators and Batteries. Wages £2 9s. per week of 56 hours.—Apply,

GENERATING STATION,
Stalybridge.

SWITCHBOARD ATTENDANT WANTED.

Switchboard Attendant required for combined A.C. and D.C. power station. Certified undertaking. Experience in three-phase generation a recommendation, but not essential. Wages 35s. per week, rising yearly by 2s. 6d. to 40s., with 10s. bonus. Apply, stating age, experience, and enclose copies of not more than two recent testimonials, to G. R. SPURR, Electrical and Tramways Engineer, Priory Avenue, Walthamstow, E.17

ELECTRICIAN.

Experienced Electrician required to take charge of electrical equipment of fleet of cars, also lighting, etc. Good wages to first-class man. One who has had experience of armature winding preferred. Box 27, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, Strand, London, W.C.2

POSITION WANTED.

A live, tactful and capable man, aged 36 years, finally discharged from Army, several years' tramway and omnibus administrative and mechanical experience, at present holding an appointment with a large omnibus company, desires a change. Salary required, £220 to £250 per annum. Address, Box 76, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

FOR SALE.

CITY OF LEEDS.

Electricity Department.

Engines, Alternators, and Condensing Plant for Sale.

Offers are invited for the following Plant, discarded to make room for larger sets:—

One 2,000 B.H.-P., triple-expansion, three-cylinder, vertical Belliss Engine.

One 2,000 B.H.-P., triple-expansion, three-cylinder, vertical McLaren Engine.

Two Sets horizontal surface Condensing Plant, each having a cooling surface of 3,400 square feet, with Air-Pumping Engines and Circulating Engines.

Two 1,400-kilowatt two-phase Alternators and Exciters.

The Plant is in good working order, and can be inspected by appointment.

Offers will be considered for the whole or any part of the plant.

The Specification, etc., may be obtained from the undersigned.

The Corporation do not bind themselves to accept any offer.

Offers are to be addressed to THE MANAGER, Electricity Department, 1, Whitehall Road, Leeds.

C. NELSON HEFFORD,
Manager.

1, Whitehall Road, Leeds.
December 20, 1917.

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OF EVERY DESCRIPTION.

SAND OR DIE—2 h.p. to 600 h.p.

ROBERT W. COAN,

Telegrams: KRANKASES, ISLING, LONDON. | 219, GOSWELL RD., LONDON, E.C. | Telephones: 3046 CITY. 4579 CENTRAL.

TRAMWAY SUPPLIES, Ltd.

Tramway Engineers,

OVERHEAD LINE MATERIALS AND SUPPLIES.

Sole Manufacturers of

TURNER'S PATENT AUTOMATIC POINT CONTROLLERS.

Telegrams: "Controllers, Leeds." Telephone: 3488 Leeds. | 160, WOODHOUSE LANE, LEEDS.

When you want High Quality

High Speed and Carbon
Twist Drills
Centre Drills
Reamers—Taper
,, Parallel
,, Expanding

Milling and Facing Cutters
Hack Saws
Slitting Saws
Band Saws (Wood or Metal);

Bright Mild Steels, all sections; Tool Steel; Stocks and Dies; Taps and Wrenches; and every other requirement for the Tramway, Motor and Engineering Industries,

Write or 'phone to

Hays, Hunter & Standen Ltd.

110, Cannon Street, London, E.C.4.

'Phone: City 3456-7.

73, Lichfield St., Wolverhampton. 'Phone: 630 Wolverhampton.

Sole Sales Representatives for the Celebrated "FASTNUT" WASHERS. Over Two Millions used annually by the L.G.O. Co Write for free samples.

ROLLING STOCK SPECIALITIES.

OUR RATTAN

(NATURAL, GLAZE, DULL FINISH, OR COLOURED)
in twill, straight, or fancy weaves, canvas backed or unbacked, is

BRITISH MADE THROUGHOUT

from the splitting of the cane to the finished article.

We hold **LARGE STOCKS OF RAW MATERIALS** and can GUARANTEE PROMPT DELIVERIES.

Particulars of other **BRITISH SPECIALITIES** *upon application.*

THE GENERAL SEATING COMPANY, LTD.

13, CITY ROAD, LONDON, E.C.

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THE
Tramway AND Railway World

Established in 1892 and Published by

THE TRAMWAY & RAILWAY WORLD PUBLISHING CO., Ltd., AMBERLEY HOUSE, NORFOLK STREET, LONDON, W.C.

Sixty-four issues are published annually, including twelve large numbers which are fully illustrated and printed on art paper.

SUBSCRIPTION.

The TRAMWAY AND RAILWAY WORLD can be obtained, post free at the following rates:—

FOR THE UNITED KINGDOM—Twenty-five Shillings per annum, including 64 issues, of which 12 are illustrated numbers. One Shilling per Single Copy.

FOR ALL PLACES ABROAD—Thirty Shillings per Annum.

SATURDAY, JANUARY 5, 1918.

TRANSPORT ORGANISATION.

IN an article based upon doubtful premises, a "special" correspondent of a daily newspaper asserted on December 25 that "the vital need for road transport economy and unity of control is forcing itself upon the attention of the Government." Road transport, it was further stated, is the concern of about ten Government departments, viz.: the Ministries of Food and Munitions, War Office, Admiralty, Air Board, Post Office, Local Government Board, National Service Ministry, Railway Executive, and Board of Trade. We fail to discern what support can be accorded to another statement that "with all these diverse authorities involved in a problem that calls for solution, the need of a body which will co-ordinate conflicting interests, avoid overlapping and duplication of officials, and dictate the best use of available road transport facilities becomes apparent." It is too late now to think of taking measures for co-ordination during the war. That course should have been adopted two years ago for the mechanical transport of the Army Service Corps and the Ministry of Munitions, when much waste might have been avoided in directions too well known to need enumeration. An authority to undertake the task of national co-ordination might have been formed from a London Traffic Board, the formation of which was recommended a decade ago by a Royal Commission, and also in 1913 by the Select Committee on Mechanically Propelled Vehicles, only to be rejected so recently as the year of the outbreak of war. Given additional powers to meet war needs, such a Board could have instituted area authorities for the provinces, formed from tramway and omnibus undertakings and chambers of commerce. From the Traffic Board would have sprung at a more reasonable date the National Tramway Committee that has been brought into existence. In existing circumstances the allocation to munition transport officers and to Food Committees of the task of organising bulk transport and retail deliveries is a wise course. In some districts considerable progress has been made with the work, though in the Metropolis the questions of heavy transit and of the deliveries from the popular stores have made no headway. The "special" correspondent is a long way behind current practice when he states that "probably the local Food Committees will be given power to say how the foodstuffs, of which they regulate the distribution, shall be delivered." Two months ago in some instances they naturally sought the aid of tramways for parcel distribution, and progress has also been achieved in averting duplication of deliveries, while milk sellers have had redistribution of customers. The exercise of compulsory powers by devolution is the means by which heavy and light transport can be made to serve in this crisis. It is difficult to see what further advance can be made by relegating the study of transport among other matters, to the Consumers' Council, which according to the statement made at the Labour Conference on December 29 by the Ministry's Parliamentary Secretary, the Ministry of Food are setting up at headquarters. Public traction authorities will be wise if they formulate emergency plans for a much wider use of their conveyances than is at present sought for parcel traffic. Three years ago nobody would have predicted our present traffic difficulties. Germany has long since appropriated her tramways for war needs, and our National Tramway Committee may before long have to deal with a like situation. The supply of petrol is an important feature of the question, and an ominous indication of the petrol situation is to be found in the fact that in the last week of 1917 the Voluntary Aid Detachment in Birmingham were deprived of the petrol hitherto available for conveying to their homes men of the Services for whom there were no other facilities late at night.

DEVELOPMENT OF THE BOARD OF TRADE.

Important changes in the work of the Board of Trade are foreshadowed by Sir Albert Stanley, the President, in the first number of a new and improved series of the *Board of Trade Journal*, which was published on Thursday. He also shows how the *Journal* is to be used in connection with the enlarged activities of the Board. In a "Foreword," Sir Albert says that it is now proposed to widen the scope of the *Journal* by including articles dealing generally with all of the activities of the Board of Trade, as well as those of the new joint Department of the Foreign Office and Board of Trade—the Department of Overseas Trade (Development and Intelligence). In the course of his further remarks he says: The war has emphasised the need of greatly enlarging and strengthening the Board, which is responsible for dealing with all questions affecting trade, and of adapting it to meet the larger demands which will in future be made upon it in respect of the ever-growing needs of British commerce and industry. To meet these increased services, the Board of Trade is being reorganised and strengthened, and in an early issue of the *Journal* a full explanation of the changes will be published. While I hope that we shall make the *Journal* in its new form of greater interest and value to business men, I do not propose that it should be run on the ordinary commercial lines. After March 31 next all trade advertisements will be excluded from its pages, and its columns will be devoted solely to the object of assisting commercial and industrial interests by giving information as promptly and as completely as possible. Our aim is to establish the most amicable relations with producers, manufacturers and distributors, and to assist by friendly advice and co-operation in the gigantic task of re-establishing and increasing our trade and industries after the war. We propose also to secure for our business men, whether they are manufacturers, merchants or carriers, information from all parts of the world. The commercial intelligence system will be developed and extended; reports from Trade Commissioners, Commercial Attachés and Consular Officers will be constantly received and promptly circulated, and every effort made to secure reliable and up-to-date information. . The great task of assisting in the restoration of our trade and industries after the war, which will largely fall upon the Board of Trade, depends for its success upon the closest co-operation with the business community. At best we can only assist by giving early and reliable information on all matters affecting trade, and by taking such steps in collaboration with the

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interests concerned as the circumstances may require. No Government Department, no matter how efficiently it may be conducted, can in my opinion secure success for our trade unless the traders and manufacturers themselves simultaneously put forth strong efforts on their own behalf. The ultimate success must depend upon the traders and manufacturers themselves. We propose to give the widest publicity possible to our daily work and to open the door to suggestions and advice, and in return we ask for the great business world to meet with us frequently in a spirit of friendliness and co-operation, actuated by one motive only—the advancement of our trading interests in all parts of the world.

BOARD OF TRADE TRAMWAYS COMMITTEE.

POWERS DEFINED.

The Board of Trade Journal of January 3, the first issue in its new form, contains a statement with regard to the duties of the Board of Trade Tramways Committee. This Committee, as previously reported in our columns, has been appointed to consider the needs in respect of rolling stock, materials and plant of tramways and light railways which are essential to the prosecution of the war, and, subject to the approval of the Board of Trade, to take such steps as may be necessary or desirable to supply those needs by means of transferring rolling stock, materials or plant from less essential tramways or light railways or otherwise as may be practicable. A list of the members was given in our last issue.

The Board of Trade Journal now gives more precise information as to the principal duties of the Committee, which it is expected will be as follows :—

(1) To take steps to provide where necessary for the loan or transfer of rolling stock, materials or plant from one undertaking to another.

(2) To determine the relative priority of the demands of various tramway and light railway undertakings for necessary materials and supplies, and to make the necessary arrangements in the matter.

(3) To deal with questions of new or increased services and the maintenance of existing services, and, if considered necessary, to make recommendations for the closing of the traffic of any undertaking, either wholly or in part.

(4) To consider the question of the construction of new lines or the extension of existing lines, and to make recommendations as to the supply of the necessary materials, plant, etc., therefor.

(5) To value the materials and plant which may be released by the reduction of services or the closing of any existing lines, and to advise as to the amount of compensation payable in respect thereof, and the loss in revenue involved, if any.

(6) To consider such applications for the revision of existing statutory tolls and charges of tramways and light railways as may be referred to them by the Board of Trade, and to make recommendations as to the action to be taken.

To the Editor of THE TRAMWAY AND RAILWAY WORLD.

SIR,—I desire to thank you for publishing in the last issue of your valuable paper details of the powers conferred by the Board of Trade upon the newly appointed Tramways Committee. The drastic powers conferred upon this Committee may well make tramway authorities ponder. Acording to the Order it is within the power of the Committee to commandeer the rolling stock, permanent way, etc., of any tramway undertaking in the United Kingdom, and, unlike the railways, when taken over nothing whatever is said as to how these authorities, whose properties are so commandeered, are to be compensated. It is very gratifying to know that owing to the agitation Mr. Dalrymple has been added to the Committee in order to represent Scottish Tramway undertakings, but an aditional member is not sufficient to represent municipal interests, and the agitation is likely to be carried on until proper representation is given to the English municipalities as well as to the Scotch. Although it is stated in the Press that a meeting of the Lancashire and Cheshire tramway managers was recently held in Manchester at which a resolution was passed approving of the action taken by the majority of the Council of the municipal Tramways Association in the selection of members to serve on the Special Committee, one would not like to suggest the methods of our old friends the Tooley Street tailors in connection with a matter of such serious importance, but I think it might reasonably be asked "Why was not a meeting of the whole of the tramway authorities throughout the country summoned at the outset, and their views ascertained?" which action would certainly have resulted in representation in proportion to the importance of the municipal tramways being insisted upon. Even now, at the eleventh hour, why was not such a meeting called, instead of sectional meetings, and last, but not least, may we enquire why were not the chairman and deputy-chairman—who, after all are the real representatives of municipalities—consulted on this matter, either at the outset, or even after the blunder of the majority of the Municipal Tramways Association Council was discovered?

Thanking you in anticipation, and apologising for writing at such length.—Yours faithfully,

December 31, 1917. "TRAMWAYS MANAGER."

Classes in Transportation are among the courses of study arranged at the Canadian Soldiers' University which has been established at Vimy Ridge on the Western Front. Five thousand students were enrolled in the various classes during the first five days.

ELECTRIC VEHICLE PROGRESS.

The current quarterly issue of the magazine of the Electric Vehicle Committee of Great Britain is an interesting number. In the opening article it is stated that the "demand for electric vehicles is far in excess of the supply available in war-time. Repeat orders are the feature of the market." Adverting to the failure of some electricity undertakings to provide facilities for charging batteries, the article states that a large demand can be handled without spending a penny on mains or services, and without adding a kilowatt to the maximum demand. The electric vehicle load is exclusively a night load, save for a secondary demand for boosting in the middle of the day—itself an interval of low load.

In an article headed "War and After War," the writer says :—"It has been demonstrated to the full that electricity is a most efficient substitute for petrol and horse traction in short-radius transport. If we could transform street cleansing and other municipal services by using electric vehicles, and do all coal carting, goods distribution, and other local conveyance by battery traction, there would be an enormous saving in petrol, horses, and feeding-stuffs, in addition to economies in labour and other costs."

Details are given of the fleet of sixty vehicles belonging to Harrods Stores, all having batteries of Edison Accumulator manufacture. The great majority are of half-ton capacity, the heaviest of the few exceptions being two-ton. They are used for house-to-house distribution, or for the conveyance of supplies from markets. For service of this kind—which is an essential service in every large business house—the electric vehicle is ideal. In most cases the night charging is sufficient for the day's run (which seldom exceeds 50 miles), but in certain instances, particularly with the heavy vehicles, a boosting charge is given during the day. In every detail connected with the electrical equipment the vehicles have proved thoroughly reliable.

Other articles describe and illustrate the vehicles of the Stratford Co-operative Society and the Great Western and Metropolitan Dairies, Ltd.; while Mr. F. Ayton, hon. secretary to the Electric Vehicle Committee, continues his illustrated article on "Methods of and Plant for Battery Charging." Full details are given by the borough engineer of Ipswich of the cost of working a 3-ton tip wagon.

WAGES AND WAR BONUSES.

The whole of the employees in the districts covered by the Lancashire and Cheshire District Council, including Manchester, Salford and seventeen other undertakings, have decided to make an application for a further advance in wages of 10s. per week. The men have already received 12s. war bonus and the women 9s. The reason for this application is given as increased cost of living. It is expected that the application will be referred to the Committee on Production.

At a meeting of the women employees of the Aberdeen Corporation tramways, it was unanimously decided to refuse the offer of the Council to grant an increase of 4s. 6d. as from January 1, and to demand the same rates as are paid to the men. It was pointed out that the men had received an increase of 3d. per hour, while the women were now offered only 1½d. per hour. A woman would have to be employed on the cars three years before she received the starting rate of a man. The meeting favoured arbitration if the Council refused to grant their demands.

The Bath Electric Tramways Company have granted a further increase in wages to their drivers and conductors of 1d. an hour. The increase applies to both men and women.

The Wages Committee of the Cardiff Corporation received on Monday the award of the Committee on Production on the arbitration between the employees in the tramway department and the Corporation. The award grants an increase of 10s. a week above pre-war wages in substitution of war bonuses, etc., which had been granted to the men prior to the arbitration.

MISCELLANEOUS NEWS AND NOTES.

Free passes on the West Ham tramways have been refused to the Board of Guardians.

Board of Trade Tramway Committee.—A meeting of the Board of Trade Tramway Committee was held in London yesterday. The proceedings were private.

Workmen's Tickets Abolished at Yarmouth.—With the object of increasing the receipts, Yarmouth Town Council has decided to abolish the issue of workmen's tickets from January 1st.

Blackpool Charitable Work.—As the result of the annual whist drive and dance of the members of the Blackpool Electricity and Tramways Institute a sum of £70 has been handed to the local Victoria Hospital.

Fewer Stops at Birkenhead.—By a reduction in the number of stops on the Higher Tranmere section of the Corporation tramways, considerable improvement has been effected in the speed of the Birkenhead cars.

The Electric Vehicle Committee.—The Electric Vehicle Committee of Great Britain have still further broadened their constitution. The Motor Trades Association are now represented by their President, Mr. Arthur Goodwin, of Messrs. Vandervell and Co., Ltd., while the Association of British Motor and Allied Manufacturers have nominated their Secretary, Mr. Horace Wyatt, as representative. Mr. J. P. Kemp (Birmingham) has been co-opted specially to represent the interests of electric vehicle agents.

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Institution of Civil Engineers.—On January 2 the Institution of Civil Engineers celebrated its one hundredth anniversary. The Institution was established at a meeting of eight engineers at the Kendal Coffee House, in Fleet Street, in 1818.

Electric Omnibuses for Lancaster.—Lancaster Town Council have sanctioned the borrowing of £6,000 for the purchase of electric omnibuses. Alderman Preston, chairman of the Tramways Committee, stated that they did not propose to spend the whole of the £6,000 at once.

Railless Cars for Goods.—It is intended to use the two railless trolley cars purchased by Halifax Tramways Committee from Dundee Corporation for the carriage of goods. The vehicles will be run on the tramway routes and will derive energy from accumulators for running elsewhere.

Shortage of Tramway Tickets.—The Sunderland Tramways Committee has been notified by the ticket printers that they are so short of paper that there is a possibility in the near future of their being unable to supply the requisite tickets. The Committee propose to make representation on the matter to the Paper Commission.

New Year Traffic at Glasgow.—Owing to the shortage of staff on the tramways and the heavy traffic during the New Year holidays, the sale of war comforts tickets was suspended on the Glasgow tramcars. Passengers were asked to contribute in the interval, through the medium of the red boxes on the cars, to the fund for providing bagpipes for Scottish regiments.

Mishap at Glasgow.—On December 26th a tramcar turning from Renfield Street into St. Vincent Street jumped the points, and crossed the roadway before it could be checked. A woman conductor standing on the rear platform was thrown from the car into the roadway and rendered unconscious. She was removed to the Infirmary, where she was detained for treatment.

Siemens Brothers and Co.—It is understood that the shares of this Company have been purchased by Messrs. Birch, Crisp and Company, with whom are associated Messrs. Cory Bros. The shares are being offered to the public through brokers, and it does not appear likely that the control will pass into the hands of any large electrical firm as was anticipated some time ago.

Wellington Employees on Active Service.—Up to March 31, 1917, one hundred and eleven members of the staff and employees of the Wellington (New Zealand) Corporation tramways had joined the Forces, and in every case where the military pay was not equal to the amount earned prior to enlistment the Council has made up the difference. The total amount so contributed for the year amounted to £3,800.

The Wigan Accident.—The coroner has opened and adjourned the inquiry into the second fatality caused by the running away backwards of a tramcar on the Pemberton route. The car left the rails at the points in Ormskirk Road, crossed the pavement and a garden, and crashed into the parlour of a house. Deceased, who was on the point of knocking at the door of the house, was caught in the wreckage.

Electricity Charge at Dudley.—The Tramways Committee have advised the Council to agree to an application by the Shropshire, Worcestershire, and Staffordshire Power Company to increase the price of electricity supplied in the borough by 12½ per cent., owing to the increased cost of labour and materials. This increase is to continue in force until the expiration of the calendar quarter next following the declaration of peace.

Mishaps at Northampton.—Twice during the last few weeks cars have run back down inclines. On the last occasion the car was brought to a standstill by colliding with a van. The car was fitted with three brakes, one of which works automatically. When the brakes were tested after the accident by Mr. Cameron they were found to be in thorough order. On the day of the second mishap a car left the rails and nearly reached the foot-pavement.

Fog Accidents at Glasgow.—A thick fog prevailed at Glasgow on December 27 and 28, when the tramway services had to be conducted at greatly reduced speed. While a car was turning into the Dumbarton Road depôt, it was run into by a car proceeding along the road, with the result that a passenger sustained a fractured leg. Another car collided in Alexandra Parade with a motor wagon. A man who was at the rear of the wagon had his thigh fractured.

Pedestrians Who Take Risks.—At Glasgow Sheriff Court a woman failed in a claim for damages against the Corporation in respect of injuries sustained by being knocked down by a tramcar. The Sheriff said that the case was a common one of a pedestrian taking the risk of crossing a street in front of a car instead of behind it, a class of case in which the pedestrian, being alone to blame, or at least guilty of contributory negligence, could not recover damages.

Good Receipts at Blackpool.—Blackpool Corporation tramway receipts continue to show remarkable increases. From April 1st to December 13th they were £93,782, an increase of £12,749 over the previous year, and a higher revenue than in any corresponding period. During the past month the receipts per car mile were 11¾d., or 3d. more than the previous year. During the nine months the receipts averaged 2s. 0¼d., or 2d. more than the previous year.

U.S.A. Organisation of Labour for the War.—The United States Government have assumed the direction of the apportionment of labour to industries vital to the conduct of the war, and the leaders of labour are assisting. Government direction of surplus labour is considered necessary to systematise the apportionment, and a central agency has been created to work in co-operation with the Department of Labour. Women are being employed on all transit services as conductors, porters, ticket-issuers and collectors, and guards.

A New Order for The Control of Lighting, published on December 25, gives power to the Minister of Munitions to direct that lights of any specified class or description shall be extinguished or their use restricted This, it is stated, is with "the view to maintaining or increasing the supply of light, heat, or power, for the purpose of the production, repair, or transport of war material, or any other work necessary for the successful prosecution of the war."

Accident at Halifax.—On December 28, a Halifax car got out of control while descending the incline at the end of Corporation Street. At the bottom it collided with the back of a loaded box cart. The driver of the cart was thrown against the tramway standard and was fatally injured. One of the horses struck an electric switch box, breaking it to pieces, and was immediately electrocuted. The car swayed considerably, but remained upright, and the driver and passengers escaped injury.

Girls as Battery Vehicle Drivers.—All but about half a dozen drivers of the sixty electric vehicles used by Harrods Stores are girls, the men being employed on the heavier vehicles. Those driven by the girls are of half-ton capacity. So far as the actual driving of the vehicles is concerned, the girls do very well, owing to the simplicity of the mechanism. The only advantage of employing men is (says the "Electric Vehicle") that they show more coolness and resource in emergencies.

Slow Running at Ipswich.—Owing to shortage of plant at the power station, caused by the necessity of executing much needed repairs, and to urgent war work, it has been necessary to reduce the speed of the Ipswich cars. The energy is supplied from the Corporation's station, and incidentally shop-keepers have been informed that if they will reduce their window lighting between the hours of 3.45 and 6.15 p.m., the period of the heaviest tramway load, it would be of assistance to the department.

Dartford Light Railway.—Bexley Urban Council, after adopting a revised list of fares for their tramways, discussed the position of the Tramways Company in regard to the Dartford Light Railway The opinion was expressed that Bexley was getting the worst of the service to the undue benefit of Dartford, and it was alleged that action by the Council was somewhat restricted by a Government Department, which brought the matter of operation to a certain extent under the Defence of the Realm Act.

Issue of London Tramway Map and Guide.—The London County Council have agreed that the issue of the tramway map and guide, suspended in April, 1916, should be resumed, but that for the present two issues a year will be sufficient; one for the summer services and one for the winter services. The cost of each issue is estimated at £1,350. From the tramway passengers' point of view at least the money is well spent, and in the long run if not at first the Council should find it remunerative by making the routes better known to the public.

Increased Fares at Halifax.—The Tramways Committee recommend an increase in tramway fares of 50 per cent., the motive being to increase the safety of the travelling public. Hitherto the Town Council refused to sanction an increase of fares, but owing to the depletion of the staff, and higher working costs, the situation has now changed considerably. The number of cars in service has necessarily been reduced, and there is consequently some overcrowding, which reaches a dangerous pitch at times. The most effective method of reducing the overcrowding is thought to be an increase in fares.

Goods Service at Wellington.—The goods department of the Wellington Corporation tramways has shown a steady growth during the last financial year, the increase having been particularly noticeable in the collection of luggage and parcels within the city. By an arrangement with the Harbour Board, a luggage receiving depôt has been erected at the wharf, specially set apart for the Lyttleton Ferry steamers, and this has proved a great convenience to local residents. Additional motor cars to cope with the business will shortly be required.

London Omnibus Reduction.—That the war has had the effect of seriously reducing the number of London General omnibuses in service is well-known, but no figures relating thereto have hitherto been published. The information has become available in a reply which the company have made to criticism. Over one-third of the total fleet was impressed by the Army in the early days of the war, and as the output of the company's works has also been taken over the vehicles have not been replaced. The recent reduction in the amount of petrol the company have been licensed to use has reduced the fleet by over 200 in comparison with the corresponding period of 1916. It is to the diminution in surface transport facilities of all descriptions that the overcrowding is partly due, and a further cause of overcrowding is the earlier nightly exodus from the business centres to the suburbs.

Increased Fares Necessary at Bath.—It will be remembered that at the annual meeting of Bath Electric Tramways Company last year Mr. J. B. Hamilton, the Chairman, expressed the desire of the directors to be able to manage without raising the fares. He added, however, that it was possible that the increasing costs of working and of materials might leave no option but to apply for an amendment of the scale of fares. The need for the adoption of this course has now been notified to the Corporation by the Company, who have asked for the support of the Council to the application to the Board of Trade. In reply, the authority have asked for full details of the proposed increases. For the first time since the opening of the tramways, the cars did not run on Christmas Day, and the employees much appreciated the concession as a recognition of their attention to duty during the year.

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Free Conveyance of Soldiers at Huddersfield.—Huddersfield Tramways Committee have felt themselves reluctantly compelled to withdraw from January 1st the privilege of free riding for soldiers and sailors between the hours of 12 noon and 2 p.m., and 5 and 6.30 p.m. A census recently taken showed that during one week no fewer than 18,900 men were conveyed without payment. The cars have recently been overcrowded, particularly during the rush hours, and the Committee after some discussion decided that it had become necessary to curtail the concession. Volunteers in uniform will be allowed to travel at half-fares as hitherto.

Petrol Consumption Between London Termini.—Birmingham Voluntary Aid Detachment have had their petrol supply stopped for the cars that were used for the conveyance of soldiers from the railway stations late at night. The stoppage led to remarks being made concerning the petrol consumption for similar work in London. In reply, Major Freemantle, City of London Motor Volunteers, has stated that their cars running from the southern to the northern termini average 11½ miles per gallon. That there is no waste is proved, he says, by the fact that the petrol is supplied by the Army authorities, to whom a daily report is made on the work done.

The Service at York.—Alderman Meyer, Chairman of York Tramways Committee, has replied to a newspaper correspondence on the alleged deficiencies in the service on one or two routes. The Chairman's observations should serve to enlighten the critics as to the increasing difficulties under which the tramways are carried on after three and a half years of war, and the citizens will be fortunate if the undertaking is able to go through the war without further reductions. For a place of the size of York, a seven-minute service must be considered satisfactory. That the tramways are appreciated is shown by the Alderman's reference to the "amazing and constant growth of the traffic from the very beginning."

Stoppage of Christmas Services at Manchester.—The Manchester public were greatly inconvenienced by the absence of any service on Christmas Day. The Manchester *Evening Chronicle*, alluding to the matter, says that the public are not likely soon to forget the action of the tramway workers in refusing to provide even a modified service of cars. A correspondent of the paper remarked that the tramway workers do not study the public, although if it were not for the public, their services would not be required. Another correspondent writes that for indifference to the public interests the Manchester tramway servants are an easy first. Their attitude on Christmas Day capped all.

Passengers' Slowness in Moving Up.—Difficulty continues to be experienced in persuading standing passengers to move further up the cars since the reduction in the number of cars owing to labour shortage. This want of consideration not only delays the starting of a car, but prevents it being utilised to the full extent of the excess passengers concession which was granted soon after the outbreak of the war. But for the increasing shortage of paper, managers might be able to secure an improvement by issuing an appeal to passengers. Failing that step, the method adopted on the Newcastle Corporation Tramways is worthy of wider observance. In that city the motormen supplement the requests of the women conductors by informing passengers that the car will not start until the appeal has been complied with.

Standardisation of Overhead Construction.—A meeting of the sub-committee of the Municipal Tramways Association, which is dealing with the question of the standardisation of overhead tramway construction, has been held at Leeds. The object is to standardise overhead fittings used in tramway work, including trolley wires and trolley wheels, so that after the war manufacturers will not have to keep such large stocks, and will be able to give good deliveries at reasonable prices. At the present time, there are numerous different forms and types of one fitting. It is expected that the work of standardising the fittings will require considerable time, as it is intended to collaborate with the American Tramways Standardisation Department, and the British Engineerings Standards Committee.

Effects of a Snowstorm at Oldham.—Reporting to the Tramways Committee at their last meeting for the year, 1917, Mr. P. Priestly, general manager, stated that he had to send out the snow ploughs on all sections about 2.30 p.m. on Sunday, December 16. Four hours later the gale brought down telegraph wires on the exposed Summit and Shaw sections, and the fallen lines became entangled with the trolley wires. The service was cut short at the borough boundary, and although the tower wagon came along, nothing could be done until the post office engineer got a gang of men. This route was not safe to run until Wednesday evening at 6 p.m., although workmen's cars got as far as Dogford Road in the morning. Four cars had to be left all night on Summit section, but were brought in on the Monday afternoon. The Grains Bar section was cut off until Wednesday afternoon by heavy drifts, and it was impossible to keep the track clear with the ploughs. The very severe weather told upon the motormen's sick list, making the running of an adequate service very difficult. The department were much handicapped by damage to the cars during the storms. Four cars had broken lifeguards and twelve broken pilot boards. This entailed fixing about 350 lifeguard laths, using over 1,000 bolts, etc., apart from the ironwork which had to be repaired. There were also five cars with broken axles and three cars to be re-tyred, but these were all running on Christmas Eve. Every credit is due to the traffic and the works departments for their extra work during the severe weather, both for repairs and driving. During the fortnight the traffic showed an increase of £900 as compared with the corresponding period of the previous year.

Swansea and Bulk Electricity.—In some comments on the report of the Ministry of Reconstruction suggesting the establishment of generating stations for sixteen great centres, Colonel Sinclair, Chairman of Swansea Electricity Committee, has stated that it would be possible to combine the whole of West Wales under one central station, instead of there being half a dozen or more as at present. While the main proposal was open to criticism, he had no doubt of the advantages that would accrue if larger existing stations absorbed smaller ones within a certain radius. This was being done at Swansea, and the Electricity Committee had in hand a scheme that would enable them to supply other important centres to the advantage of both.

Christmas Week's Receipts at Newcastle.—Notwithstanding the total suspension of the tramway service in Newcastle on Christmas Day, the receipts for the Saturday, Sunday, Christmas Eve and Boxing Day amounted to £5,004. The takings on the cars show a substantial increase on the figures for the corresponding five days last year, which included the Christmas Day's service. The details for the five days of the two years are as follows:—

	1917.	1916.
Saturday	£1,800	£1,355
Sunday	734	580
Christmas Eve ..	1,510	732
Christmas Day ..	—	880
Boxing Day ..	960	937
Totals	£5,004	£4,484

PERSONAL.

Mr. James Bird, clerk of the London County Council, has received the honour of knighthood.

Mr. A. Nichols Moore, engineer of Newport Corporation electricity department, has been granted a further increase in salary of £50 per annum.

Mr. J. R. P. Lunn, engineer and general manager, has been recommended by the Darlington Corporation Electricity and Light Railways Committee for an increase in salary of £100, and a further similar increase by two annual increments of £50.

Mr. C. J. Hunt, chief engineer to Messrs. Bruce Peebles and Co., Ltd., was married on December 22, to Miss Marion V. Lambert, of Edinburgh. As a souvenir of the occasion, and also as a mark of appreciation, Mr. Hunt was presented with a handsome case of cutlery by the officials and staff.

Mr. L. E. Harvey, tramways manager and engineer, has been granted permission by the Ilford Tramways Committee to attend the meetings of the Committee on the Standardisation of Overhead Equipment. Councillor Dane said he understood that the meetings were to be held at Leeds.

Mr. O. S. Holt, after almost forty years service, has retired from the Secretaryship of the Great Central Railway Company, but he will continue to act in a consultatory capacity. He is succeeded by Mr. James H. Campbell, a son of Major-General James Campbell R.E. Mr. Campbell has had considerable railway experience in South Africa.

Mr. John Wardle, who was appointed director of cold storage and inland transport at the Ministry of Food last August, has resigned that position and returned to his duties as commercial manager of the Metropolitan Railway. Much curiosity has been expressed in business circles as to the reason which has promoted the resignation particularly as a number of other officials have tendered their resignations. During the last five months much progress is known to have been made in extending cold storage in London and Manchester.

Signaller H. Glover, formerly a conductor on Wigan Corporation Tramways, was killed by a shell on December 13, on the western front. He enlisted in January, 1915, and was wounded in September, 1916, returning to France in March, 1917. His widow has been informed by his captain that he had never known a better or a more cheerful and willing soldier.

Alan Tegetmeier, London Regiment, who was killed on December 8, aged 20, was the younger son of Mr. and Mrs. G. Tegetmeier, of Purley. He was educated at Dulwich College, where he gained in succession junior and senior scholarships, and matriculated at London University in 1907. He joined the staff of the British Electrical Federation, Ltd., in 1913, and at the outbreak of war enlisted. He chose to remain in the ranks, and served in France and Salonika. Early in 1917 his regiment was moved to another front.

CONTRACTS AND ORDERS.

The British Westinghouse Co., Ltd., have an order from Hull Town Council for extra high-tension switchgear at £1,284.

Ilford Urban District Council have ordered 1,000 tons of nut slack coal for the electricity works from Messrs. Blackman and Co., at £1 1s. 11d. per ton.

Messrs. Ransomes, Sims and Jefferies, the contractors to Southend Corporation for the supply of electric vehicles for dust collection, have increased the amount of their quotation from £932 to £966 each.

Derby Town Council has accepted tenders from Babcock and Wilcox, Ltd., for a boiler, at £4,500; C. A. Parsons and Co., Ltd., for a 4,000 KW. turbo-alternator at £24,000; and Holmes Bros., Ltd., for tramcar wheel tyres.

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FINANCIAL REPORTS AND MEETINGS.

Brazilian Traction, Light and Power Co., Ltd.—A quarterly dividend of 1½ per cent. has been declared on the preference shares.

The British Empire Trust Co., Ltd., announces that the Toronto Railway Company has declared and paid on January 2, 1918, a dividend on its ordinary shares of 2 per cent. for the quarter ending December 31, 1917, being at the rate of 8 per cent. per annum to shareholders of record on December 15, 1917.

L.C.C Traffic Receipts.—The traffic receipts for the week ended January 2 amounted to £52,446, an increase of £6,769, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to January 2 (thirty-nine and a half weeks) the total receipts were £2,191,934, an increase of £295,363, on the corresponding period of 1917.

Triplex Safety Glass Co.—The report of the directors for the year ended November 30, was presented at the meeting of the Company on Monday last. The total capital authorised has now been issued. This has enabled the Company to discharge its mortgage liabilities and to provide additional working capital which the extension of the business required. The result of the year's trading is a net profit of £20,133. Out of this sum it is proposed to write off a further £2,000 from development account, depreciation £249, leaving £17,883, and making with the balance brought forward a total of £18,142. An interim dividend of 4 per cent. was paid in July last, and a final dividend of 6 per cent., making 10 per cent., for the year was declared, leaving a balance to be carried forward of £12,500. The company has disposed of its Canadian rights to a syndicate in New York for a cash consideration, and an interest in the new company about to be formed there.

Wellington (N.Z.) Corporation Tramways.—The report of Mr. W. M. Morton, general manager of the Corporation tramways and electric lighting department, to the members of the Power Station and Tramways Committee, shows that the total revenue of the tramways department for the year ended March 31, 1917, amounted to £207,946, an increase of £20,082. The working expenses were £145,385, an increase of £26,568, and capital charges £43,601, an increase of £1,674, leaving a net surplus of £18,960, a decrease of £8,160, as compared with the preceding year. Including the receipts from the supply department, there was a surplus of £20,689, and deducting expenditure on special work, and active service pay, the net credit balance for the year was £12,863. Mr. Morton states that great difficulty has been experienced in obtaining materials and equipment for the construction of new cars, and consequently only six passenger cars were completed during the year, making the rolling stock 119 vehicles, of which 113 are passenger cars. The increase in the volume of traffic has required the use of every available car during the rush hours. As soon as material becomes available, it will be necessary to accelerate construction so as to provide additional cars for traffic, and a sufficient margin to permit the whole of the stock to receive a periodical overhaul. Before additional cars can be used, however, the plant at the generating station will have to be increased. The new car shed at Onepu Road was occupied early in December, 1916. The shed is of reinforced concrete, and has accommodation for 42 cars, but provision has been made for doubling this capacity. Very little progress has been made by the contractors with the turbine plant ordered early in 1916, but it is hoped that the Imperial authorities will permit the work to be expedited. Notwithstanding the large increase in traffic, it is gratifying to note that there has been a decrease of over thirty per cent. in the number of accidents as compared with the previous year.

WEEKLY TRAMWAY TRAFFIC SUMMARY.

The official traffic returns of thirty-eight of the principal tramway undertakings in the United Kingdom for the week ended December 22 give total receipts of £196,171 or £33,590 more than in the corresponding week of last year. The total length of track included in the returns was 2,029 miles.

The receipts this year were at the rate of £96 13s. 8d. per mile of single track, and last year at the rate of £80 2s. 7d., thus showing an increase for the week of £16 11s. 1d. per mile open. Certain London and provincial tramways have temporarily discontinued the publication of traffic receipts.

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2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅞	52/6	52/6
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4½	45/-	49/-
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14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	20¼	20¼
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11⅛	9⅞	9⅞
4½%	4½%	Do. 4½% Deb.	100	96	77	77
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87¼	88½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	45⅜	44⅞
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	90⅜	89½
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7⅛	£6/15/9	£6/15/9
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	82/6	82/6
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	92	92
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	29½	29½
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—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅜	18/3	18/3
3/-	3/-	Do. 6% Cum. Pref. ..	5	¾	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	77	77
—	—	Metropolitan Dist. Ord. ..	100	21¾	15⅜	15
—	—	Undgd. Elec. Rys. of London ..	10	21½	34/4½	30/-
		Do. "A"	1/-	⅜	5/3	5/-
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	101	102½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	101½	102½
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	82½	80¾

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1916-17	Latest Return. 1917-18	Latest Return. Incr. or Dec.	Aggregate. Wks.	Aggregate. 1917-18	Aggregate. Incr. or Dec.
Aberdare U.D.C. ..	Dec. 25	464	536	+ 72	38	17,118	+ 1,575
Aberdeen Corporation ..	„ 26	1,902	2,167	+ 265	30	64,903	+ 7,253
Ayr Corporation	„ 29	283	354	+ 71	33	16,164	+ 1,867
Belfast City	„ 28	6,109	7,802	+ 1,693	39	254,914	+ 31,633
Birkenhead Corporation	„ 30	1,348	1,717	+ 369	39½	72,119	+ 11,408
Birmingham Corporation	„ 22	15,709	19,634	+ 3,925	38	702,921	+ 96,180
do. Motor Omnibuses ..	„ 22	868	1,148	+ 280	38	40,399	+ 2,198
Blackburn Corporation ..	„ 19	1,022	1,322	+ 300	38⅔	57,185	+ 10,000
Blackpool & Fleetwood ..	„ 31	445	716	+ 271	51⅔	44,164	+ 1,148
Bournemouth Corporation	Jan. 2	2,079	2,347	+ 268	39⅔	101,977	+ 9,558
Bradford Corporation ..	Dec. 29	5,803	7,405	+ 1,602	39	300,805	+ 33,675
Bristol	„ 28	4,595	5,648	+ 1,053	52	283,029	+ 29,433
Burnley Corporation ..	„ 29	1,745	2,054	+ 309	..	..	..
Burton-on-Trent Cor. ..	„ 30	259	346	+ 87	39	12,332	+ 1,384
Bury Corporation	„ 30	1,310	1,477	+ 167	39½	64,688	+ 8,476
Chatham & District ..	„ 20	1,058	1,035	— 23	51	64,447	+ 2,048
Cork Electric	„ 20	470	525	+ 55	51	28,057	+ 2,095
Derby Corporation ..	„ 29	953	1,045	+ 91	39	47,601	+ 3,119
Dublin United	„ 21	6,552	7,010	+ 458	51	343,395	+ 33,285
Dundee City	„ 26	1,380	1,590	+ 210	32⅓	50,029	+ 5,000
East Ham Corporation ..	„ 29	1,077	1,224	+ 147	39	54,046	+ 3,389
Exeter Corporation ..	„ 28	363	369	+ 6	39	15,780	— 137
Glasgow Corporation ..	„ 29	23,922	26,830	+ 2,908	30⅔	805,041	+ 94,184
Glossop (U.E. Sup. Co.) ..	„ 22	129	159	+ 30	51	7,934	+ 876
Halifax Corporation ..	„ 25	1,910	2,398	+ 488	38⅔	95,451	+ 9,155
do. Motor Buses ..	„ 25	51	56	+ 5	38⅔	1,893	— 33
Hastings and District ..	„ 31	1,050	1,186	+ 136	52	63,889	+ 10,127
Huddersfield Corporation	„ 29	2,513	3,251	+ 738	39	125,412	+ 14,214
Ilford U.D. Council ..	„ 29	534	694	+ 160	39	29,890	+ 3,372
Ipswich Corporation ..	„ 29	410	572	+ 162	39	26,550	+ 6,290
Isle of Thanet	„ 29	264	204	— 60	13	2,126	— 1,332
Kilmarnock Corporation	„ 29	185	222	+ 37	32½	6,555	+ 773
Lanarkshire	„ 20	1,969	2,738	+ 769	51	141,596	+ 24,233
Lancashire United ..	„ 26	1,924	2,474	+ 550	52	122,565	+ 28,122
Leeds City	„ 29	9,584	11,535	+ 1,951	39	432,534	+ 48,124
Leicester Corporation ..	„ 29	3,276	3,935	+ 659	..	..	..
Leith Corporation	„ 1	830	1,059	+ 229	28⅔	31,025	+ 4,601
Leyton U.D. Council ..	„ 27	1,380	1,827	+ 447	39	73,446	+ 10,224
Liverpool Corporation ..	„ 22	15,017	16,878	+ 1,861	50⅔	798,236	+ 78,721
Llandudno & Colwyn Bay	„ 21	196	222	+ 26	3	659	+ 66
Loudon County Council	Jan. 2	45,677	52,446	+ 6,769	39½	2,191,934	+ 295,363
Maidstone Corporation ..	Dec. 27	209	263	+ 54	39	9,546	+ 1,000
Manchester Corporation	„ 29	16,537	20,284	+ 3,747	39	812,398	+ 79,467
Nelson Corporation ..	„ 8	172	218	+ 46	36	8,507	+ 753
Newcastle-on-Tyne Cor.	„ 29	6,384	7,084	+ 700	39	307,541	+ 44,801
New St. Helens & Dist. ..	„ 26	1,136	1,359	+ 223	26	37,410	+ 8,934
Northampton Cor. ..	„ 28	754	912	+ 158	39	32,897	+ 4,682
Nottingham Corporation	„ 27	3,339	4,563	+ 1,224	39	173,336	+ 20,572
Oldham Corporation ..	„ 30	1,897	2,642	+ 745	40	113,126	+ 14,906
Portsmouth Corporation	„ 29	1,946	2,262	+ 316	..	..	..
Provincial	„ 29	1,907	2,402	+ 4	12⅔	29,905	+ 3,969
Reading Corporation ..	„ 27	877	1,038	+ 161	39	41,273	+ 7,652
Khondda Tramways ..	„ 20	1,184	1,534	+ 350	51	76,877	+ 11,544
Rotherham Corporation	Jan. 2	1,725	1,742	+ 17	40⅓	71,954	+ 10,104
Salford Corporation ..	Dec. 31	5,023	5,717	+ 694	39⅔	260,690	+ 47,189
Sheffield Corporation ..	„ 30	10,489	11,101	+ 612	40	483,189	+ 60,262
Southampton Cor. ..	„ 26	1,577	1,996	+ 419	38⅔	79,748	+ 14,384
Southend-on-Sea Cor. ..	„ 26	648	664	+ 16	39	35,779	— 981
South Shields Cor. ..	„ 8	780	934	+ 154	36	34,468	+ 3,933
Sunderland Corporation.	„ 30	1,692	1,858	+ 166	39	72,030	+ 6,866
Sunderland District ..	„ 12	594	802	+ 208	6	4,684	+ 905
Swindon Corporation ..	„ 26	253	295	+ 42	38⅔	10,538	+ 2,499
Torquay Tramways ..	„ 20	458	620	+ 162	51	33,922	+ 3,973
Tyneside Trys. & Trmrds	Nov. 21	525	811	+ 286	21	18,921	- 4,749
Wallasey Corporation .	Dec. 29	1,125	1,404	+ 279	39⅔	62,030	+ 7,951
Walsall Corporation ..	„ 29	726	1,159	+ 433	39	38,828	+ 6,182
Walthamstow U.D. Coun.	„ 29	834	1,120	+ 286	39	48,227	+ 286
Warrington Corporation	Nov. 29	524	701	+ 177	35	19,506	+ 2,037
West Ham Corporation	Dec. 27	2,790	3,471	+ 681	38⅔	142,563	+ 17,218
Wigan Corporation ..	„ 27	1,781	2,213	+ 432	39	78,645	+ 12,656
Yorkshire (West Riding).	„ 30	2,022	2,528	+ 505	52	111,585	+ 20,242

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War :—Accrington, Bath, Blackpool, Bolton, Brighton, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREICN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916	Latest Return. 1917	Aggregate. Wks.	Aggregate. 1917	Increase or Dec.
Anglo-Argentine	Dec. 31	£58,103	£63,998	52	£2,720,626	+ £48,221
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Oct. 7	3,390	3,560	28	22,113	+ 3
Brazilian Traction (Mlrs.)	Nov.	7,160,000	7,695,000	47	84,131,000	+ 6,558,000
Brisbane	Sept.	32,530	31,600	39	294,840	— 2,820
British Columbia .. $	Oct.	445,263	491,964	17	1,842,476	+ 146,817
Buenos Aires Lacroze ..	Nov.	39,133	39,679	21	189,575	— 1,214
Burmah Tram. & Light Rs.	Nov.	26,824	27,761	17	109,598	+ 4,844
Calcutta .. .. Rs.	Dec. 29	72,478	76,984	52	3,557,777	+ 85
Cape Town	Nov.	..	16,522	..	..	..
Carthagena and Herrerias	Dec.	2,399	4,424	52	49,566	+ 19,776
Cordoba	Sept.	13,313	12,463	26	82,895	— 1,588
East India	Nov.	1,942	871	17	5,174	— 3,893
Hong Kong .. .. $	Nov. 3	13,750	12,591	44	597,598	— 39,377
Kalgoorlie	July	2,521	2,713	30	18,154	+ 696
La Plata	Dec.	4,437	4,606	52	48,963	— 1,874
Lima	Nov.	33,608	37,466	47	397,198	+ 26,199
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras .. (2 weeks) Rs.	Nov. 30	29,664	33,914	47	765,562	+ 70,392
Manila .. .. $	June	59,432	73,900	..	..	..
Manaos .. .. Rs.	Sept.	141,286	157,761	..	..	..
Montevideo	Nov.	28,404	31,060	4	31,060	+ 2,656
Pernambuco	Dec. 23	4,200	4,769	50	199,134	+ 39,884
Peruvian .. .. $	Nov.	925,820	1,034,790	21	4,987,180	+ 472,530
Port Elizabeth	Nov.	..	3,807	..	..	..
Rangoon	Nov.	5,033	5,358	47	55,379	+ 1,975
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Nov. 10	12,814	12,797	45	580,690	+ 12,216
Toronto .. .. $	Oct.	907,460	1,043,886	43	9,934,998	+ 1,021,774
Winnipeg .. .. $	Oct.	278,817	301,722	43	2,733,516	— 6,755

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THE

Tramway & Railway World

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

COUNTY BOROUGH OF WEST HAM.

Tenders for Uniform Clothing.

The Council hereby invite Tenders for the Supply of Uniform Clothing for

(*a*) Tramways Department.
(*b*) Fire Brigade and General Uniforms.

Forms of tender and further particulars may be obtained from, and also standard samples seen at, the Tramway offices, Greengate Street, Plaistow, E.13, in respect of Tramway Clothing, and the Borough Engineer's Office, Town Hall, West Ham, E., for the Fire Brigade and General Clothing, between the hours of 10 a.m. and 4 p.m. (Saturdays excepted).

A deposit of £1 will be required in respect of each form of tender, which will be returned on receipt of a bona-fide tender.

No tender will be considered unless the same is delivered at the Office of the Town Clerk, Town Hall, West Ham, E, in the envelope supplied, by registered post, not later than 9 a.m. on Tuesday, January 22, 1918.

The Council do not bind themselves to accept the lowest or any tender. The contractor will be required to enter into a bond, with sureties, for the due performance of the contract, and no goods, materials, etc., will be ordered under the contract until such bond has been duly executed.

The contractor whose tender is accepted, and with whom a contract is entered into, will be required to pay to the whole of his workmen such rate of wages, and observe such hours of labour as are recognised by the Workmen's Trade Unions, and in force at the time of signing the contract. In the event of any breach of such agreement the Council will enforce the penalty clause in its entirety.

By order of the Council,
GEORGE E HILLEARY,
Town Clerk.

Town Hall,
West Ham, E.
January 3, 1918.

STEEL WIRE CABLE FOR MATLOCK COUNCIL CABLE TRAMWAY.

Tenders invited for supply of a Steel Wire Tramway Cable, length about 1,967 yards. Circumference 3⅛ inches, Manilla core, delivered on reel at Tram Depot, Matlock, carriage paid.

Full particulars, specifications and terms as to payment on application to J. D. Evans, Town Hall, Matlock.

Tenders (accompanied by Samples of Wire) under seal, marked "Cable," to reach undersigned not later than Wednesday, January 23, 1918.

R. TAYLOR,
Clerk to Council.

Town Hall, Matlock,
January 2, 1918.

POSITION VACANT.

WAKEFIELD CORPORATION.

Electricity Department.

Charge Engineer wanted immediately, to take charge of eight-hour shift in a high-tension A.C. Power Station. Plant capacity, 4,000 kws. Present wage, 49s. 6d. per week. Only applications from men having had experience in a similar post will be considered,

H. A. NEVILL,
City Electrical Engineer.

POSITIONS VACANT.

CITY OF BIRMINGHAM.

Electric Supply Department.
Appointment of Junior Shift Engineer.

Applications are invited for the position of Junior Shift Engineer, required at the new temporary station, Nechells, to look after the electrical control of the station. The appointment will be permanent.

Applicants must have had a sound mechanical and electrical engineering training, and must have had previous experience in a large extra-high-tension three-phase power house.

The commencing salary will be £130 per annum, rising, at the discretion of the Committee, to a maximum of £200 per annum, plus £23 extra per annum (if married £33) during the War.

Applications (made on forms which can be obtained from the Secretary of the Electric Supply Department), accompanied by not more than three testimonials as to experience, ability and character, must reach the undersigned not later than January 19, 1918. Preference given to applicants ineligible for further military service

Electric Supply Offices,
14, Dale End, Birmingham
January 8, 1918.

R. A. CHATTOCK,
City Electrical Engineer.

COUNTY BOROUGH OF BOOTLE.

The Bootle Corporation are desirous of receiving applications for the post of Charge Engineer at their Generating Station. Applicants should have good technical training and experience with the operation of modern E.H.T. plant and rotary converters. Salary £150 per annum; present war bonus £31 4s. per annum.

Any inquiries as to duties and applications enclosing copies of not more than three recent testimonials stating briefly training, experience, age, and earliest date at liberty should be addressed to

BOROUGH ELECTRICAL ENGINEER.

Pine Grove, Bootle, Lancs.

ERITH URBAN DISTRICT COUNCIL.

Electricity Supply and Tramways Department.

Charge Engineers wanted. Commencing salary £130 per annum, plus 15 per cent. War Bonus. Applicants must have had experience in the operation of steam turbines and 3-phase alternating current supply generally. Permanent position to men free from military service.—Apply, ELECTRICAL ENGINEER AND TRAMWAYS MANAGER, Walnut Tree Road, Erith.

SHIFT ENGINEER WANTED.

Shift Engineer wanted, used to high-tension A.C. and low tension D.C. power plant. Preference will be given to those having experience with turbo plant of 2,000 KW. and upwards. Apply, stating age, experience, together with salary required and copies of three recent testimonials, to the BOROUGH ELECTRICAL ENGINEER, Electricity Works, Keighley.

COUNTY BOROUGH OF HALIFAX.

Test Room Superintendent.

Wanted immediately, a Meter Test Room Superintendent conversant with A.C. supply. State technical and practical qualifications and salary required. Permanent appointment.—Applications to be made to W. M. ROGERSON, Esq., M.I.E.E., Borough Electrical Engineer, Halifax.

OVERHEAD LINESMAN WANTED.

Wanted, Overhead Linesman for Warrington Corporation Tramways. State wages required.—Apply F. O. L. MATHIAS, Electricity Works, Warrington.

Foreman for armature and coil winding shop, used to traction work. Over army age, or ineligible for military service by rejection or exemption.—Address "F.A.," c/o Anderson's Advertising Agency, 14, King William Street, W.C.2.

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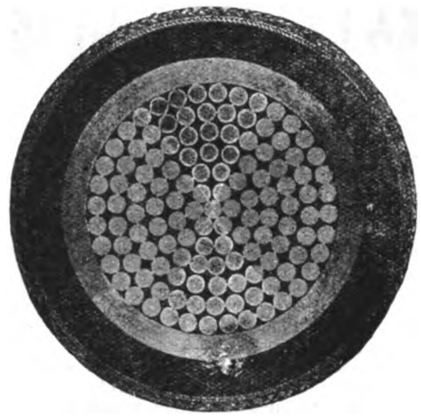

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THE
Tramway AND Railway World

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SATURDAY, JANUARY 12, 1918.

POWER SUPPLY FOR ELECTRIC RAILWAYS.

THERE are so many points of interest in the recent report of the Coal Conservation Sub-Committee of the Government's Reconstruction Committee that some of them are apt to be overlooked. It will be remembered that with the objects of effecting a great saving in coal consumption for power purposes in this country and of providing industry with a cheap and abundant electric power supply, the sub-committee recommend the establishment of about 16 great generating stations capable of supplying the whole of the country through an efficient system of distributing mains. Incidentally the scheme would involve the supersession of most existing power stations, which from their small size and unfavourable situations are uneconomic, and indeed from the modern point of view often wasteful. The point of interest in the report to which we would at present direct attention is that referring to power stations for electric railways in the London district. A list is given of half a dozen of such stations which have in recent years been erected within a radius of four or five miles from Hammersmith. With the possible exception of the power station at Lots Road, Chelsea, which supplies the Metropolitan District and the London Electric Railways, none of these is on a sufficient scale to secure the full economies which are obtainable. Moreover, the Lots Road station is the only one among them which is situated close to an illimitable supply of cooling water, which is a prime necessity if the use of cooling towers is to be avoided and the greatest economy obtained. Even the Lots Road station is small compared with the kind of place contemplated by the sub-committee. Its total capacity is put at 63,000 kilowatts—say 85,000 horse-power—divided among eight or nine generating units. The sub-committee consider that in the generating stations they propose each unit should be of about 50,000 horse-power. That is as high a figure as has yet been reached for a single turbo-generator anywhere in the world. The sub-committee think that if the six generating stations referred to, along with two other general electric supply stations in the same district, had all been combined on one advantageous site, great economy of capital, labour and coal would have resulted. It is a rather curious thing that only one electric railway system in the Metropolitan area has seen its way or has been able to get its supply of energy from an electric supply company. By adopting that course the London, Brighton and South Coast Railway Company was able to avoid building a power station of its own, and no doubt the advantages to the railway company and to the power company are mutual. The only other case of importance in England in which a railway company buys energy for traction purposes is the North Eastern Railway, whose Newcastle local lines are worked electrically. In that particular case the conditions are such that it would probably have been foolish for the railway company to have provided a power station of its own. They are the conditions which the sub-committee wish to see all over the country, namely, an abundant electric supply at a price which is only made possible by the largeness of the scale of operations and the good load factor. If the scheme of the sub-committee comes to fruition we may hope to see a big development of railway electrification and possibly of tramway extension. Many of the existing tramway power stations will no doubt be ultimately abolished if it becomes possible to get energy from the national power supply at a price which no merely local station can look at. The day of the absurd little electric lighting station will be still more definitely over.

STRIKE OF LONDON ELECTRICAL WORKERS AVERTED.

AWARD OF INCREASE IN WAGES.

The demand made by electrical workers in London, that they should receive the increase of 12½ per cent. in wages which was granted in October last to certain time-workers in Government-controlled engineering works and foundries in the metropolitan area was granted on Monday. The London branch of the Union has 4,500 members, and some of them who were not employed in electric traction or lighting stations had ceased work on the Saturday as a protest against the negotiations being allowed to drag on for three months. The union has altogether twenty thousand members, who it was said would be called out if the demands were not granted.

A settlement was reached at a conference on Monday, at which Sir George Askwith, the Chief Industrial Commissioner, at the request of the War Cabinet, met representatives of the employers concerned, and of the Electrical Trades Union. The negotiations lasted for about eight hours, being protracted, it is understood, owing to the reluctance of some of the employers to agree to make the payment of the bonus retrospective; but, finally, it was decided that the higher rates of wages should take effect from the first full pay after October 13, last. War-time advances which have been already granted or may be made in compliance with a pending decision of the Committee on Production are to be taken into account in fixing the rates of earnings of workmen who have received advances not exceeding 20s., while any war-time advances exceeding 20s. are to be merged in the addition of 12½ per cent. on earnings which is now conceded. The following are the terms of Sir George Askwith's award:—

All plain time-working employees in generating stations, sub-stations, and on mains directly concerned in the generation and distribution of electrical energy, including the technical staff and, in the case of electrical contractors, employees engaged on munitions work, including the technical staff, shall receive a bonus as follows:—

(1) All workers who have received not more than 20s. war advance, the equivalent of 12½ per cent. on earnings; any advance given by a pending decision of the Committee on Production, or any advance given by agreement or otherwise, equivalent to the advance of 5s. granted by the Committee on Production to certain trades from the first full pay day in December, to be added as a war advance to the advance already given, and to count as part of the earnings from the date of such advance.

(2) All workers who have received over 20s. war advance sufficient to produce the equivalent of the 20s. plus 12½ per cent. on earnings, that is to say, any excess in war advances over 20s., shall merge in the 12½ per cent. on earnings.

(3) Workmen who have received the equivalent of 20s. war advance plus 12½ per cent. on earnings, or more, are not affected by this settlement. In calculating whether 20s. has been received it shall be taken as 20s. for the normal week as recognised in the district.

(4) Basis rates of wages and conditions of labour shall remain as at present until the withdrawal of war wages and war bonuses. This clause is without prejudice to pending negotiations, if any, which may have commenced.

(5.) This decision shall take effect as from the beginning of the first full pay the next after October 13, 1917.

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CORRESPONDENCE.

BOARD OF TRADE TRAMWAY COMMITTEE.

To the Editor of THE TRAMWAY AND RAILWAY WORLD.

SIR,—I read in your last issue a letter on the above subject signed "Tramway Manager." Reference is made in such letter to a "recent meeting of the Lancashire and Cheshire Tramway Managers held in Manchester." These terms are not correct, and are misleading, and as I had the honour to preside over the meeting in question, I think it desirable to explain that an invitation to the meeting was sent to the Chairman, Deputy Chairman and Managers of all municipal tramway undertakings in Lancashire and Cheshire, and if the writer of the letter happens to be manager of an undertaking in either of these counties, he doubtless had an invitation along with the representatives of his Committee. There was an excellent attendance of both Committee representatives and managers, and after the whole of the circumstances attending the action of the Executive Council of the Municipal Tramways Association had been explained the meeting unanimously passed the resolution referred to in the letter. If the writer of the letter is a member of the Municipal Tramways Association, and will address a communication to the Hon. Secretary of the Association, I am perfectly certain he will be supplied with a satisfactory explanation which will disabuse his mind of the idea that any blunder was made by the Executive Council. It is unfair to arrive at a decision, as apparently the writer of the letter has done, without first making himself fully acquainted with the whole of the circumstances. A Chairman of a Tramways Committee dealing with a large municipal undertaking, I am quite satisfied that the interests of the municipalities will be well cared for by the present representatives on the Board of Trade Committee; but the writer of the letter must not lose sight of the fact that this Committee is formed first and foremost in the *National* interest to further the help that tramway undertakings may render to bring the war to a satisfactory conclusion.—Yours faithfully,

H. LINSLEY,
Chairman of Salford Tramway Committee.

January 8, 1918.

MISHAPS AT NORTHAMPTON.

To the Editor of THE TRAMWAY AND RAILWAY WORLD.

DEAR SIR,—With reference to the paragraph *re* mishaps at Northampton in your issue of January 5, I would like to correct your misapprehension with regard to the second car leaving the rails and nearly reaching the foot pavement.

Both runaway cars took place on the same route and on the same hill, but with several weeks between, and this hill is situated on our new route, and rises up into the centre of the town with a very awkward right-hand curve at the top, making it a somewhat awkward curve to take in view of the heavy traffic in the town centre. Both the cars were of the same type, possessing four brakes *i.e.*, the hand brake, slipper brake, rheostatic brake, and the automatic run-back brake which is part and parcel of the D.K. 13B equipment; and, all these brakes being found by me to be in perfect working order, it still remains a mystery to me how the cars got out of hand. I think only one theory is applicable, and that is that in the excitement of the moment the motorman locked the wheels with the hand brake, thus preventing the automatic brake from operating.

The car which left the rails was a car which was being brought into depot with a broken axle, and jumped the track on a short curve.—Yours faithfully,

JOHN F. CAMERON,
General Manager.

Corporation Tramways,
St. James, Northampton.
January 9, 1918.

PAPER RESTRICTION AND ADVERTISING.

An official notice was issued this week stating that the Royal Commission on Paper have received within the last few days correspondence largely in excess of the normal quantity relating *inter alia* to the Paper Restriction Orders. Delay in replying to correspondence will be inevitable during the next fortnight, but with regard to the Paper Restriction (Posters and Circulars) Consolidation Order of October 22, 1917, it is felt that much unnecessary correspondence with both issuers and recipients of advertising circulars, catalogues and price lists will be avoided if the following points are made public:—

(1) It should be noticed by the many recipients who complain to the Commission that circulars have been sent to them without request that such despatch does not constitute an offence under the Order.

(2) The Order permits in general the distribution of advertising circulars (including catalogues and price lists, whether solicited by recipients or not) within a limit of one-third of the weight of similar matter distributed during the corresponding period of last year, and so far as such distribution is concerned, only relates to the period ending January 31, 1918. The General Licence of November 8, 1917, further permits the unrestricted despatch of trade catalogues and price lists from traders to traders, up to January 31, 1918.

(3) It is not, as many have assumed, the intention of the Commission to prohibit the issue of advertising circulars or the exhibition of posters after that date. A new Paper Restriction (Posters and Circulars) Order, revoking and replacing the existing Order of October 22, and the General Licence of November 8, is being framed and will be published as soon as possible before Feburary 1.

WAGES AND WAR BONUS.

LABOUR PROPOSALS ADOPTED FOR MUNITIONS BONUS.

The following official statement was issued on Thursday evening:

The Cabinet have decided that the settlement of any claim arising from the recent Orders granting an advance of 12½ per cent. to plain time workers in the shipbuilding and munitions trades shall be referred to the Ministry of Labour, in place of the War Cabinet Labour Committee.

Following this decision, the Minister of Labour received the following resolution, in which the Minister of Munitions concurs:—

That this Committee of Trade Union representatives in the shipbuilding and engineering trades advising the Minister of Munitions request the Minister to represent to the Minister of Labour, who, they understand, is now charged with the settlement of the 12½ per cent. question, that the following should be the terms of settlement:

(1) That the 12½ per cent. shall be extended to cover time workers who have not yet received the advance in the shipbuilding and munitions trades.

(2) That so far as the pieceworkers in these trades are concerned, no 12½ per cent. shall be given, but that low piece prices shall be revised, and that employers shall be given to understand that this is the decision of the Government.

The Minister of Labour proposes to deal with applications on the lines of this resolution and under the procedure of the Munitions of War Act, 1915, Section 1, and Schedule 1.

The applications which have already been received by Government Departments are so numerous that it is almost impossible for settlement to be arrived at within the 21 days from the date of reference to the Ministry of Labour, but this need not cause any uneasiness in the minds of the officials of the trade unions or the workmen concerned. The arbitration tribunals have power to antidate awards for such period as seems reasonable.

The Minister of Labour urgently appeals to all concerned to exercise patience. It is the duty of all to continue to make their best effort. Stoppages of work will not help matters in the least, but will delay settlements.

This statement is made with the concurrence of the representatives of the workmen in the trade unions chiefly concerned, and the Minister sincerely hopes that a willing response will be made.

Negotiations between the National Transport Workers' Federation and representatives of employers have resulted in Sir George Askwith fixing a national flat rate war bonus of £1 for all carters, carmen and mechanical drivers. In many cases the bonus has already been given.

FURTHER DEMAND BY TRAMWAY WORKERS.

Notices were sent out on Thursday on behalf of all the tramway men and tramway women throughout the country, demanding an increase of war wages amounting to £1 per week on pre-war rates. Nearly a hundred municipal and private tramway authorities are concerned, and something like 35,000 workers. The advances already granted range from 8s. to £1 per week on pre-war rates, and it is hoped by the workers to secure a uniform bonus of £1 per week. The chief Industrial Commissioner will meet representatives of the Union next week.

A special committee of Newcastle Corporation, appointed to deal with war bonuses for municipal employees, have considered the institution of a flat rate allowance of 25 per cent. to the Corporation's graded staff and it has been decided that the city treasurer should prepare a report on the subject. The Committee agreed to recommend an increase in the war bonus to women in the employ of the various committees, excluding tramway workers, of 3s. per week, subject, however, to such adjustment that no existing bonus should exceed 5s. 6d. per week.

Northampton Town Council on Monday last granted increases in the bonuses to various members of the staff. Adult motormen and conductors over 21 years of age will receive a further 6s. 6d. per week, making 15s. in all, and other male employees under 21, 3s. 3d. per week, making 7s. 6d. over pre-war rates. Adult female employees will receive 1s. 6d. per week, making 10s. over the pre-war rate, and the female employees under 21 9d. per week, making a total of 5s. over pre-war rates. This is the first time the Northampton Town Council have differentiated between men and women in the bonus.

LINKING UP OF GENERATING STATIONS.

A basis of agreement for linking up the Sheffield and Rotherham generating stations has been arrived at by the two Corporations, in order that the manufacturing industries may secure the fullest possible supply of energy without risk of failure due to breakdowns. It is intended to ask the Ministry of Munitions for a free grant of a portion of the cost. The Treasury have sanctioned the proposed borrowing of £602,532 by Sheffield for a new electric power station.

The Ministry of Munitions have recommended Leeds and Bradford Corporations to consider a linking-up scheme between their respective generating stations.

Record at Glasgow.—Glasgow Corporation tramways have made another record. For the week ended January 5, which included the New Year holiday, the receipts amounted to £29,947. The previous best record for a week, made in June of 1917, was £28,197. The mileage open for traffic is 99 miles, the same as a year ago. The number of passengers carried during the week was 8,554,421, an increase of 808,749 as compared with the corresponding week last year. From June 1, 1917, to January 5, 1918, thirty-one and a half weeks, there has been an increase of nearly £100,000 in receipts.

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RESTRICTIONS ON USE OF GAS FOR MOTOR VEHICLES.

The expected Order by the Board of Trade restricting the use of gas for the propulsion of motor vehicles was issued this week. It is also a consolidating Order in reference to the use of motor spirit. Regulations are made relating to taxicabs and to hackney carriages not licensed to ply for hire, and the Defence of the Realm Regulations which dealt with the latter have now been repealed. Motor-cabs licensed to ply for hire by the police or local authority may be used for any purpose whatever, but only within the area for which they are licensed, and to any point three miles beyond.

The purposes for which hackney carriages not licensed to ply for hire may be driven are fully set out, and in substance they are the same as those for which a private car may be driven. Cars or cabs which stand for private hire without a licence from the police or local authority are now subject to the same restrictions as other hackney carriages not licensed to ply for hire.

The use of gas for driving motor vehicles is now made subject to the same restrictions, as regards the purposes for which it may be used, as the use of motor spirit, and such restrictions come into force from the date of this Order. Subject, however, to such restrictions, gas may be used for driving motor-vehicles without a permit for one month from the date of the Order pending the issue of permits, after which date no form of gas may be used for the purpose without a gas permit granted by the Petrol Control Department of the Board of Trade. Gas permits will not give the holder a right to a supply of gas, but where it is available there is at present no intention to limit by licence the quantity that may be purchased.

Owners of private motor-cars, omnibuses, cabs, and hire cars who are at present using gas will, as far as possible, be granted permits which will enable them to use their cars for the purposes permitted by the Order. Permits will only be granted to owners of cars which are not already fitted with gas apparatus under the same circumstances as determine the issue of motor spirit licences. In no case will both a gas permit and a motor spirit licence be granted in respect of the same car.

Owners of trade vehicles may obtain gas permits for purposes for which motor spirit licences would otherwise have been allotted, but a gas permit and a motor spirit licence will not be granted for the same vehicle, subject to this exception, that for every trade vehicle holding a gas permit a licence for the purchase of a small quantity of motor spirit will be granted for emergency purposes, varying in amount according to the size and power of the vehicle, but in no case exceeding four gallons a month.

Circumstances may at any time arise which will make it necessary that in those areas where gas is plentiful and easily available it shall be substituted for petrol for driving motor-vehicles, and due regard will be had to this contingency in regulating and adjusting the issue of petrol licences and gas permits.

MISCELLANEOUS NEWS AND NOTES.

Moon Chart for January.—Messrs. C. A. Vandervell and Company, of Acton, London, W.3, have issued their moon chart for January. This has been prepared by their chief engineer, Mr. A. H. Midgley.

Swansea Extension.—Swansea Corporation Electric Lighting Committee have received permission from the Ministry of Munitions to order the turbine and auxiliaries required for the proposed extension.

Fire at Krupp's Works.—A Dutch newspaper, referring to the fire at Krupp's works at Essen last month, says that extensive damage was done, and over two hundred electric motors were made totally unusable.

Motor Fire Engines Wanted.—The Urban District Council of Blaydon is on the look out for any suitable motor for fire brigade purposes. Epsom Urban District Council is also making inquiries as to the purchase of a motor fire engine.

Tramcar Collection at Birkenhead.—The tramway car collections for military and other war funds have proved a gratifying success. They have now been carried on for one hundred weeks, and the total amount subscribed is £4,770, an average of over £47 a week.

Fares Charged to Ex-Soldiers.—Consideration of a request received by Colchester Tramways Committee from an organisation of discharged soldiers that such men should be allowed to use the cars at reduced fares, has been adjourned to the next meeting of the committee.

South African Railway Electrification.—Sir William Hoy, says the *British South African Gazette*, regards the electrification of the South African railways a question which his department must tackle seriously. The Johannesburg to Durban line may be the first to be dealt with.

New Plant for Bath Electricity Works.—The Bath Corporation Electric Lighting Committee have instructed their engineer to ascertain whether it would be possible to obtain, in readiness for next winter's load, the plant that would be required to replace the Diesel engine if this were sold.

Stoppage on the L.C.C. Tramways.—The London County Council tramway service from East Hill, Wandsworth and Tooting Junction was disorganised on Tuesday morning owing to ploughs of several cars becoming wedged in the conduit. Some time was required to extricate them, and the services were stopped for a considerable time, passengers to the city being obliged to continue their journey to the city on foot.

London United Tramways Bill.—The Surrey County Council and several other local authorities have decided to oppose this bill, which, it will be remembered, would enable the company to increase fares, to postpone until 1960 statutory purchase, and relieve the company of the payment of wayleaves.

Automatic Circuit Breakers.—The British Thomson-Houston Company have issued a 12-page descriptive list, No. 4222, dealing with automatic circuit breakers for A.C. and D.C. circuits. This list like the others of the series, is fully illustrated and contains tabulated dimensions, dimension drawings, and shipping regulations.

U.S.A. Aeroplane Engine.—The "Liberty," specially designed for the war planes of the United States has been "tried out." It flew a heavily loaded plane for 1,200 miles at high speed without stopping. Twenty thousand of these machines are included in the war plans already formulated, and the aviators are already in the training camps.

Petrol Electric Cars in New Zealand.—In the annual report of the New Zealand Government Railways for the year ended June 30, 1917, Mr. H. H. Jackson, the chief mechanical engineer, reports that the Thomas trasmission rail motor car was erected during the year, and employed on suburban services. The Westinghouse petrol-electric rail motor car was also employed on suburban traffic.

Wotan Pencil Economiser.—Siemens Brothers' Dynamo Works, Ltd., 38, Upper Thames Street, London, E.C., will send to any reader who applies for it a useful pocket pencil economiser. In appearance this pencil holder resembles a fountain pen, and by its use any lead pencil may be used down to the last fraction of an inch. The holder has a split elastic tube, which adapts it to any size pencil.

Speed in Morley.—The Mayor of Morley and two members of the Corporation have been deputed to see the management of Leeds Corporation Tramways in order to complain of the alleged excessive speed at which their cars travelled in Morley, and also of the inattention of some of the conductors. The town clerk has been directed to complain to the Ministry of Munitions of the dangerous speed of their motor wagons.

Difficulties at Doncaster.—Councillor Balmforth, chairman of the Tramways Committee, at a recent meeting referred to some complaints that had been made with regard to the services. He said it was impossible to put more cars on the road, and urged those who were able to do their shopping in the daytime, in order to relieve the evening traffic. It was possible that they might later obtain a few extra cars by the help of the Tramway Committee that the Board of Trade had recently set up.

Halfpenny Fares in Scotland.—The Paisley District Tramways Company have made an application to the Board of Trade Tramways Committee for authority to abolish the halfpenny fares. The company are compelled by their Act to grant halfpenny fares, and they therefore cannot be discontinued without special authority. One of the Glasgow newspapers asks if the halfpenny fares in that city are in danger. With the costs steadily mounting up, halfpenny fares now barely pay, and the long distance passengers are frequently crowded out.

Flares Above Overhead Wires.—The Lighting Committee of Bolton Corporation have decided to remove a number of name lamps in view of the fixing of flares over the electric wires. This entails the fixing of indicators at points where cars stop, and the committee have asked the Tramways Committee to indicate the name of the nearest street to each stopping place. Replying to a complaint of tramway traffic congestion in Great Moor Street, and Bradshawgate, Councillor Higson, chairman of the Tramways Committee has stated that the matter was in hand, and as soon as the Lighting Committee indicated where they wanted the new lamps, necessary arrangements would be made.

Halifax Fares Increased.—Halifax Town Council has agreed to the recommendation of the Tramways Committee for an increase of 50 per cent. in all the tramway fares, and for the abolition of transfer tickets. The town-clerk has been instructed to ask the Tramways (Board of Trade) Committee to urge the Government forthwith to empower local tramway authorities to increase their fares beyond the limits now prescribed by the local Acts, with a minimum charge of 1½d. An application will also be made to the Board of Trade for consent to increase the fares on the motor omnibuses. If this consent is obtained the fares generally will be increased by a halfpenny on each stage.

Charge Against Omnibus Supply Company Promoters.—At Bow Street Police Court, on January 8, Harry John Lawson, 65, of Woodstock Avenue, Golders Green, was charged with having conspired with Stuart Alfred Curzon to defraud the public through a company called the General Omnibus Supply Manufacturing Co., Ltd. The detective officer who arrested defendant on the previous day stated that he asked, "Is it the 'buses?" Witness replied, "Yes." Defendant then asked, "Is it the Government?" and again witness replied "Yes." Defendant pointed out all the papers that were left in reference to the case, and added that the Official Receiver had taken everything connected with the businesses. Witness had not been able to execute the warrant for the arrest of Curzon who, he believed, was out of the country. Defendant applied for bail, saying that he was so severely injured in the torpedoing of the steamship *Sussex*, that there was no likelihood of his running away. Mr. Lewis said the prosecution would not oppose substantial bail. Mr. Graham Campbell said he understood a considerable sum of money was obtained by the company; about £4,000 was mentioned in the information. He remanded the case until January 16 and offered to accept bail—defendant in £1,500 and two sureties in £750 each.

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Safety Lessons for School Children.—A placard inscribed "Safety First Object Lessons for School Children" has been published by the London Safety First Council. The most prominent lines thereon read "Is is Dangerous" and "It is Safe." Both are in white block letters, the former on a red, and the latter on a green background, both inscriptions having a black border. The whole of the letterpress relates to street traffic dangers, and how to avoid them, the recommendations being admirably phrased, and most distinctly displayed. The placard should be seen in every school in populous communities.

The Christmas Stoppage at Bolton.—At the January meeting of the Town Council, Councillor A. E. Holt stated that the Corporation instructed the Tramways Committee to maintain the Christmas service, and he asked for information as to why they failed to carry out the resolution. Councillor Higson, chairman of the committee, replied that the employees refused to meet the committee because they had made up their minds they would not work, and though the help of the Committee of Production was sought, its representative at Manchester was told that the men had decided to stand by their resolution not to work. That they did not work was not due to any lack of effort on the part of the committee.

Army and Navy Use of Petrol.—During the first week in January the Petrol Executive issued another appeal to the Forces for the utmost care and economy in the use of petrol. The appeal points out that every gallon saved either adds to the tonnage space available for food, or, if used for commercial road transport in food distribution, helps to keep down food prices. "Never throw away petrol or paraffin," says the appeal. "Do not spill it when refilling, or keep the engine runnng unnecessarily when the car is stopped. Whoever uses petrol or paraffin wrongfully or unnecessarily or wastes it is acting to the advantage of the enemy. Think seriously of this before using a motor vehicle or craft or ordering it to be used."

Women Drivers for Hull.—After having discussed the subject at two meetings, Hull City Council on January 8, agreed to the Tramways Committee's recommendation to employ women as drivers when and where necessary. Councillor C. Raine, deputy chairman of the Committee, said the department had lost four hundred men, and would probably have to sacrifice more. Men could not be got to fill the vacancies, and if the Committee could not get women to carry on the service it would have to be closed. They desired to train women temperamentally fit for the work. Women were largely employed in other places, including two hundred and fifty in Glasgow, and there had been no more accidents than where the drivers were exclusively men.

Extensions at Belfast Power Station.—Belfast Council has approved the recommendation of the Tramways and Electricity Committee that steps should be taken to give effect to Sir John Snell's recommendations in regard to the electricity station, and an application will be made to the Local Government Board to sanction a loan of £60,000. The Committee, while recognising that the present is not a favourable time for borrowing money, consider that the necessity for the expenditure is urgent, owing to the breakdown of the turbo-generator, the repair of which is not considered advisable. This view is held both by Mr. Bloxam, their engineer, and also Sir John Snell. Negotiations are now nearing completion for the installation of a new 5,000 KW. generator.

Interconnection of Tramways at Blackpool.—The *Manchester Guardian* remarks that possibly after the war the Blackpool Corporation, with a highly successful tramway undertaking of its own, may seek closer relationship with the companies that have lines or running powers in Blackpool territory—in fact, in some of the most lucrative and densely populated parts of Blackpool. Already the Corporation and the Blackpool, St. Annes, and Lytham Tramways Company use each other's lines to a limited extent, although the Corporation and the Blackpool and Fleetwood Tramroad Company do not. The St. Annes and Lytham Company has had another good year, and appear to be slowly shaking off the financial trouble of the last nineteen years.

Oldham Purchases Electric Omnibus.—Although one member suggested that an electrically worked omnibus would probably cost one-third less in normal times, Oldham Corporation decided by a large majority at their January meeting, to exercise an option which the Tramways Committee had been given for the purchase of a battery omnibus. Councillor Cheetham, chairman of the Committee, said the vehicle was needed to replace the present petrol omnibus, which was being worked on gas, and had long proved unsatisfactory. During the past year they had disposed of two of the three omnibuses, and had gone carefully into the question of electric omnibuses in several towns, and in each case they were entirely satisfactory. There was also the working of their electric tower wagon. He had promised the Council that they would be able to run that at not more than 2d. per mile, but reckoning the price of electricity at 1½d. per unit the cost worked out at 1·4d. The Electricity Committee were installing a charging apparatus that would enable them to reduce the cost of energy to 1d., when they would be able to run the wagon at ·97d. per mile. It had run over 1,000 miles to the entire satisfaction of the managers. With an inefficient service they had average receipts of 11d. per mile, and the Committee hoped that an efficient service would realise 14d. per mile, thus rendering the service profitable. On petrol omnibuses the total outlay had been £2,550, and up to March 25 last they had redeemed £1,450, and there was £34 in the sinking fund. To that had been added £900 from the two omnibuses sold, and the balance of the sinking fund had since been provided for. The new venture would thus be inaugurated with a capital account of just over £800.

Proposed Revision of Fares at York.—A recommendation was submitted to the Corporation on January 7, for the price of dinner hour and War Office tickets to be increased by one halfpenny for each return journey; for War Office contract tickets to be discontinued; and for preliminary steps to be taken to obtain powers for authority to charge increased fares generally if necessary. Alderman Meyer, Chairman of the Electricity and Tramways Committee, stated that the traffic had enormously increased since the war, but the additional wages paid to the employees had more than covered the increased receipts. At the moment the Committee did not recommend an alteration of the general fares, but their decision in that respect was not final. Some discussion ensued on the services run to various districts, and the recommendation was referred back for reconsideration, with a request to "arrange more equitable services on the basis of population."

Oldham Tramways Committee's Aim.—Councillor Cheetham, chairman of Oldham Tramways Committee, has informed the Council that their aim was to support the management in carrying out an efficient service with obliging conductors, a service that could be relied upon, and he thought they were getting nearer that aim. The receipts were up 20 per cent. on the corresponding fortnight of last year. These remarks were made in reply to complaints of incivility on the part of conductors, Alderman Wilde stating that some of the women prevented people from getting on the cars when there was room; courtesy, he added, was almost unknown amongst them, and they ought to be taught that people were not to be talked to as if they were curs. Probably some of the trouble referred to by Alderman Wilde may be due to the fact that the Oldham cars have no fixed number of passengers allowed to stand, while the Manchester cars have a rule. As some of the cars run in both areas, the whimsicalness (as Alderman Middleton termed it) on the part of the conductors may be due to that cause.

Economy of the Electric Vehicle.—In correcting a statement in a contemporary implying that power for electric vehicles had been for a long time much cheaper in America than in this country, Mr. F. Ayton, hon. secretary of the Electric Vehicle Committee has stated that "the average rate charged in America for electrical energy used for charging electric vehicle batteries was, before the war, between 4 and 5 cents (2d. to 2½d.) per unit, whereas in this country most of the undertakings had, in 1914, adopted the standard tariff formulated by this committee, which was 1d. per unit. Even now, with the war increases that have been put on by many undertakings, the cost of electricity for electric vehicles is less than in America. The fact is that electric vehicles in America, prior to the war, showed a 25 per cent. increased economy as compared with petrol vehicles, when petrol was from 8d. to 10d. per gallon there as against about 1s. 9d. per gallon here; and electricity compared in accordance with the figures given above indicates that a greater saving will result in this country in the use of electric vehicles for the only purpose for which they are suitable—viz., work in urban and suburban areas. The figures I have so far obtained of actual results of using electric vehicles in England go to support this view."

Thermit Welding.—We have received from Thermit, Ltd., engineers, contractors and metallurgists, 075, Commercial Road, Limehouse, Poplar, London, E.14, a copy of a neat little memorandum book, which contains particulars of the Thermit process. With respect to tramway rail welding it is stated that very little work has been done in this direction, during the last year, owing to the restrictions consequent upon the war. In isolated instances the Ministry of Munitions have given permission to carry out work of special importance for the transportation of munition workers. In these cases Thermit, Ltd., have continued their usual practice of contracting for the carrying out of the work by their own men, or supplying the necessary material and appliances and lending one or more of their trained welders to superintend the work. In either case the work is done under the direct supervision of their own engineers. As is well-known, no bonds or fishplates are necessary when the rails are welded with Thermit, and a continuous rail with perfect conductivity is obtained. For the welding of high carbon rails, a modification of the process has proved efficacious. For welding in this manner a type of rail clamp is used which is specially designed to hold the rails in perfect alignment. An opportunity of testing it on a practical scale on two different tramway systems in the United Kingdom has given satisfactory results.

PERSONAL.

Mr. J. A. Vince, shift engineer at Manchester City Station, has been appointed shift engineer at the Stuart Street Station of the Corporation, at a salary of £240 per annum.

Mr. J. P. Walsh has resigned his position on the electrical staff of the Dublin United Tramways Company, and has been presented by his colleagues with a handsome gold watch.

Mr. J. M. McElroy.—The Manchester City Council had before it on Wednesday last week a resolution of the Tramways Committee, sanctioning the transfer of Mr. J. M. McElroy, the general manager of the tramways department, from the Admiralty to the Board of Trade, so as to enable him to serve on the Committee of tramway experts recently appointed by the Board, and that the request of the Admiralty that they may be permitted occasionally to utilise Mr. McElroy's services for special work in connection with the department in which he has been serving be acceded to, it being understood that Mr. McElroy will attend in Manchester to all matters of special importance arising in connection with the work of the Tramways Committee.

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Mr. E. H. Hollingsworth, elecrical engineer of St. Helens Corporation, has been granted an increase in salary to £375 per annum.

Lt.-Col. Henry Fowler, C.B.E., chief mechanical engineer to the Midland Railway, superintendent of the Royal Aircraft Factory, Farnborough, was one of the Knights of the new Order gazetted on January 8.

Mr. A. Durrant, superintendent of the overhead equipment of the Yarmouth Corporation tramways, who has been connected with the undertaking for nearly twelve years, has resigned to take up another appointment. He has been presented with a wall barometer by the staff. The presentation was made by Mr. F. L. Turner, general manager, on behalf of the employees.

Mr. Leo. Swain, manager of the Solid Tyre Department of George Spencer Moulton and Co., Ltd., 239, Deansgate, Manchester, has been appointed chairman of the Manchester centre of the Cycle and Motor Trades Benevolent Fund, and co-operating vigorously with his fellow officials, he had the pleasure of being able to announce at the first meeting over which he presided this month, that there had been a splendid addition to the list of guinea members, also transfers from the five-shilling membership to the guinea section, and a patron fee of £100 received from Messrs. Herbert Frood Co., Ltd.

Mr. L. E. Harvey, tramways manager and engineer of Ilford, has been appointed Chairman of the Committee on Standardisation of Overhead Equipment. The Committee has already begun its work, and it is now collecting information in regard to the various overhead fittings used throughout the country. The variety of design used is much greater than would be expected. In the case of a single bolt used in section insulators, it has been found that there are some thirty patterns. It is clear that types of many appliances can be greatly reduced in number with advantage both to users and manufacturers.

Mr. A. F. Pease has been appointed a Lord Commissioner of the Admiralty, with the title of Second Civil Lord. The need for the appointment of another civil member of the board, in order to meet the great increase in its administrative work, was mentioned by the First Lord of the Admiralty at the second reading of the Consolidation Bill on November 1. The Second Civil Lord will undertake during the war the administration of the director of the works department and the programme of naval works. Mr. Pease is an elder brother of Mr. H. Pease, M.P., the Assistant Postmaster-General, and is chairman of Pease and Partners. He has had an active business career in the North, in addition to his associations with Pease and Partners. He is chairman of the Mine Owners' Association, a director of the North-Eastern Railway Company and has been a prominent member of the Durham County Council.

Lieut. J. V. Knox, R.F.C., and London Regiment, who was accidentally killed in this country on January 4, was the eldest son of Mr. Vesey Knox, K.C. He was educated at Wixenford, Wokingham, and Rugby. After a short period of service in the Northamptonshire Regiment, which he entered from the Royal Military College, he became a clerk in the Principal Probate Registry. He joined a battalion of the London Regiment on August 4, 1914, and served in France from February, 1915, to July, 1916, when he was attached to the Flying Corps. He broke his jaw in an accident while training in the autumn of 1916, but had recovered, and recently qualified as a pilot.

CONTRACTS AND ORDERS.

Messrs. Dyes and Young have an order from Glasgow Tramways Committee for commutators.

Micanite and Insulators Co., Ltd., have an order for leatheroid from Glasgow Tramways Committee.

Leeds Electricity Committee has placed an order with Richardsons, Westgarth and Company, for a 6,000 KW. turbo-generator.

Bradford Electricity Committee has accepted the tender of Hicks, Hargreaves & Co., Ltd., for the supply of surface condensing plant.

S. F. Bowser and Company are to supply an oil storage and measuring system, together with pumps, to Sheffield Electricity and Tramways department, at a price of £445.

The Brush Electrical and Engineering Company have an order for a turbo-alternator from Watford Urban District Council, at £8,980, The Stirling Boiler Company are supplying a boiler at £1,750 to the Council.

Manchester Electricity Committee has accepted tenders for the supply of cable from C. Macintosh and Company, Manchester, the Western Electric Company, and Callender's Cable and Construction Company.

Electric Tramcar Handbook
FOR
MOTORMEN, INSPECTORS,
AND DEPOT WORKERS.
By W. A. AGNEW.
120 Pages, 7 ins. by 4½ ins. Cloth. Price, *1s. 6d.* Postage, *2d.*
Copies can be obtained from THE TRAMWAY AND RAILWAY WORLD Offices, Amberley House, Norfolk Street, W.C.

FINANCIAL REPORTS AND MEETINGS.

Lima Light, Power, and Tramway Company have decided a dividend of 1¼ per cent.

Edison Swan Electric Co., Ltd.—At an extraordinary meeting held on Wednesday, the resolution authorising the reduction of capital in the terms of the scheme of arrangement recently proposed, was duly confirmed.

Blackpool, St. Annes and Lytham Tramways Co., Ltd.—The past year's net receipts were £44,412 and the expenditure £33,134, leaving £11,287. After paying debenture interest, £7,500, and carrying £2,000 to the sinking fund, there was a surplus of £1,787, which has been applied in reduction of the previous adverse balance, which now amounts to £40,431.

Dublin United Tramways.—A dividend of 5 per cent. per annum (5s. per share) has been declared on the ordinary shares for the half-year. The reserve and renewals funds have been increased by £7,000, and £15,000 has been carried to the account for rail renewal, while £11,500 has been written off investments, and £13,421 has been carried forward. A year ago the dividend was at the same rate and the carry forward was £13,359.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended January 9 amounted to £51,156, an increase of £4,431, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to January 9 (forty and a half weeks) the total receipts were £2,243,118, an increase of £299,822, on the corresponding period of 1917.

Brisbane Electric Tramways Investment Co.—The Board report that two bills have been introduced by the Queensland Government, which, if passed, would injure the Company. In 1910 Sir Robert Finlay, K.C. (the present Lord Chancellor), Mr. Rowlatt (now Mr. Justice Rowlatt), and the late Sir Edward Carlile, K.C., of Melbourne, were consulted, and they advised that the basis on which the purchase price must be ascertained is the commercial value of the undertaking as a going concern. The proposed legislation will seriously reduce the revenue of the company, and as a consequence its commercial value as a going concern. It is proposed to accomplish this mainly by reducing the fares, which are already lower than those entitled to be charged.

WEEKLY TRAMWAY TRAFFIC SUMMARY.

The official traffic returns of thirty-eight of the principal tramway undertakings in the United Kingdom for the week ended December 29 give total receipts of £188,367 or £27,696 more than in the corresponding week of last year. The total length of track included in the returns was 2,029 miles.

The receipts this year were at the rate of £92 16 s.9d. per mile of single track, and last year at the rate of £79 3s. 9d., thus showing an increase for the week of £13 13s. od. per mile open. Certain London and provincial tramways have temporarily discontinued the publication of traffic receipts.

A Warning to Parents.—Several children were summoned recently at West Hartlepool Police Court for hanging on to a tramway car. Mr. Sparks, acting tramways manager, said it was an unpleasant duty for him to bring children there, but he was satisfied that unless this practice was stopped there would be some fatal accident. He asked the bench to take a serious view of the case. Writing to parents had had absolutely no effect. Children insulted the women conductors, and generally made themselves a nuisance. The magistrate said it was a dangerous practice, and it was for the parents' sake and for a warning to them that he imposed a fine of 5s. in each case. Parents must impress upon chilren that they must not do this sort of thing.

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash Jan. 10 or previous.	A Week Ago
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	69⅛	67⅛
2/9	2/9	Anglo-Argentine 5% 1st Pref.	5	4⅛	53/9	52/6
2/9	2/9	Do. 5% Cum. 2nd Pref. ..	5	4⅛	49/9	45/-
4%	4%	Do. 4% Deb.	100	91	68½	68⅛
4½%	4½%	Do. 4½% Deb.	100	98½	68	70
5%	5%	Do. 5% Deb.	100	96	66½	65⅛
—	—	Associated Omnibus Co., Ord. ..	5/-	5/16	1/3	1/3
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1 5/16	20/3	20/-
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	90½	90½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	100	102½
—	1/-	Bath Electric Trams Pref. Ord.	1	½	4/-	4/-
6d.	6d.	Do. 5% Cum. Pref. ..	1	5/16	11/-	11/-
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	71½	71½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77¼	77¼
14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	20½	20¼
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11⅜	9⅞	9⅞
4½%	4½%	Do. 4½% Deb.	100	96	77	77
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1½	Brazilian Trac. & Power Ord. ..	$100	66	46½	45½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	89	90⅜
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	£6/15/9	£6/15/9
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	82/6	82/6
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	92	92
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	29½	29½
6%	5%	Do. Pref. Ord.	100	106	28½	29½
5%	5%	Do. 5% Cum. Pref. ..	100	103	42½	41
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	82⅜	82⅜
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	56½	56½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	31½	32
6%	6%	Do. 6% Cum. Part. Pref.	100	—	72½	72½
5%	5%	Do. 5% Deb.	100	92	77¼	77¼
4½%	4½%	Do. 4½ 2nd Deb. ..	100	77½	65	65
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	72⅜	73½
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6 1/16	6 1/16
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	81/3	81/3
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	74	74
1/-*	1/-*	Cape Elec. Trams.	1	1/16	12/3	12/3
1/3	1/3	City of B. A. Trams	5	5½	82/6	82/1½
4%	4%	Do. 4% Deb.	100	97½	70	70
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	85	85
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	79½	80
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
5/-	4/-	Dublin United Trams. Ord. ..	10	8	7½	7¼
6/-	6/-	Do. 6% Pref.	10	12	10 5/16	10 5/16
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	-/9	-/9
1/2⅝*	1/2⅝*	Do. 6% Cum. Pref. ..	1	1/16	9/3	9/3
4½%	4½%	Do. 4½% Deb.	100	67⅜	50½	50½
1/1½	5½d.	Hong Kong Tramway	5/-	5/16	17/1½	17/1½
5%	5%	Do. 5% Deb. ..	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. .	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44⅜	44⅜
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	⅜	2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co. ..	10	10½	9⅞	9⅞
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	71	71
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79⅛	79⅛
9¾d.*	9¾d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
--	1½d.	London & Sub. Traction Ord. ..	1	3/32	2/3½	1/-
6d.	6d.	Do. 5% Pref.	1	5/16	7/-	5/6
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	62½	59
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	79⅜	79⅜
5%	5%	Do. 5% Inc. Deb.	100	88½	79½	79½
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	37	35
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	87½	87½
7½d.%	9¾d.*	Manaos Trams & Ltg. Ord. ..	1	3/32	3/11	3/11
5%	5%	Do. 5% 1st Deb.	100	77	71	71
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	71	71
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70	71½
5%	5%	Do. 5% Deb.	100	87	80	80
$1¼	$1¼	Mexico Trams. Common ..	$100	70	31	31
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	32	32
—	—	Do. 6% Mt. Bds. ..	100	76	25½	25½
4½%	4½%	Montreal St. 4½% Stg. Dbs. ..	100	100	91½	91½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
1/2⅜*	2/-	National Steam Car	1	3/32	18/6	18/3
9¾d.*	9¾d.*	New General Traction	1	⅛	7/3	7/3
8¾d.	6d.	Northern Gen. Trans. Ord. ..	1	5/32	12/9½	12/9½
6/-*	3/-	Para Elec. Rlys. Ord.	5	4½	75/-	77/6
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	6/7½	6/6
—	—	Do. 7% Non. Cm. Part Pf.	1	—	12/9	12/-
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8¾d.*	Potteries Elec. Trac. Ord. ..	1	1/32	6/7½	6/7½
6d.	6d.	Do. 5% Pref.	1	1/32	12/1½	12/-
8d.	1/4	Provincial Trams. Ord. ..	1	¼	20/3	20/3
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	88/9	88/9
5%	5⅛	Rhondda Trams. 5% 1 M. Deb.	100	88	81	82
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	86½	84½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	76½	76½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	87½	87½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	75	74
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/7	4/7
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	88	88
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	91½	91½
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77⅛	77⅛
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	31/3	50/-
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	66	66
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅜	18/3	18/3
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅜	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	76½	77
—	—	Metropolitan Dist. Ord. ..	100	21½	15½	15½
—	—	Undgd. Elec. Rys. of London ..	10	21½	33/9	34/4½
		Do. "A"	1/-	⅜	5/4½	5/3
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	101½	101
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	101½	101½
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	82	82⅝

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

Names.	Week ended	Latest Return. 1916-17	1917-18	Incr. or Dec.	Aggregate. Wks.	1917-18	Incr. or Dec.
Aberdare U.D.C. ..	Jan. 1	407	507	+ 100	39	17,625	+ 1,675
Aberdeen Corporation ..	,, 2	2,237	2,496	+ 259	31	67,399	+ 7,513
Ayr Corporation ..	,, 5	321	430	+ 109	34	16,595	+ 1,977
Belfast City	,, 4	5,832	6,880	+ 1,048	40	261,794	+ 32,681
Birkenhead Corporation	,, 6	1,589	1,811	+ 222	40½	73,931	+ 11,630
Birmingham Corporation	Dec. 29	14,218	16,798	+ 2,500	39	719,719	+ 98,680
do. Motor Omnibuses ..	,, 29	664	950	+ 286	39	41,350	+ 2,484
Blackburn Corporation ..	,, 19	1,022	1,322	+ 300	38⅔	57,185	+ 10,000
Blackpool & Fleetwood ..	,, 31	445	716	+ 271	51⅔	44,164	+ 1,148
Bournemouth Corporation	Jan. 9	1,926	2,186	+ 260	40⅔	104,163	+ 9,818
Bradford Corporation ..	Dec. 29	5,803	7,405	+ 1,602	39	300,805	+ 33,675
Burnley Corporation ..	Jan. 5	1,704	1,995	+ 291	..	..	..
Burton-on-Trent Cor. ..	,, 6	293	346	+ 53	40	12,678	+ 1,438
Bury Corporation ..	,, 6	1,508	1,698	+ 190	40½	66,386	+ 8,666
Chatham & District ..	Dec. 27	1,076	1,133	+ 57	52	66,158	+ 2,167
Cork Electric	,, 31	723	908	+ 185	52	28,968	+ 2,283
Derby Corporation ..	,, 29	953	1,045	+ 91	39	47,601	+ 3,119
Dublin United	,, 21	6,552	7,010	+ 458	51	343,395	+ 33,285
Dundee City	Jan. 2	1,653	1,819	+ 166	33½	51,849	+ 5,171
East Ham Corporation ..	,, 5	1,207	1,210	+ 3	40	55,256	+ 3,392
Exeter Corporation ..	,, 4	399	360	— 39	40	16,139	— 176
Glasgow Corporation ..	,, 5	26,419	29,947	+ 3,528	31⅔	834,989	+ 97,422
Glossop (U.E. Sup. Co.) ..	,, 5	138	184	+ 46	1	184	+ 46
Halifax Corporation ..	,, 1	2,093	2,570	+ 477	39⅔	98,021	+ 9,632
do. Motor Buses ..	,, 1	54	58	+ 4	39⅔	1,952	— 29
Hastings and District ..	,, 7	1,055	921	— 134	1	921	— 134
Huddersfield Corporation	,, 5	2,793	3,094	+ 301	40	128,505	+ 14,515
Ilford U.D. Council ..	,, 5	653	732	+ 79	40	30,621	+ 3,452
Ipswich Corporation ..	,, 5	416	555	+ 139	40	27,105	+ 6,422
Isle of Thanet	,, 5	268	164	— 104	14	2,289	— 1,436
Kilmarnock Corporation	,, 5	230	315	+ 85	33⅓	6,870	+ 858
Lanarkshire	,, 3	2,167	2,146	— 21	1	2,146	— 21
Lancashire United ..	,, 2	2,114	2,817	+ 703	8⅔	916	+ 147
Leeds City	,, 6	9,837	10,866	+ 1,029	40	443,400	+ 49,213
Leicester Corporation ..	,, 5	3,266	3,986	+ 720	..	..	..
Leith Corporation ..	Dec. 1	830	1,059	+ 229	28⅔	31,025	+ 5,601
Leyton U.D. Council ..	Jan. 3	1,473	1,720	+ 247	40	75,166	+ 10,471
Liverpool Corporation ..	Dec. 29	13,392	15,862	+ 2,470	51⅔	814,098	+ 81,191
Llandudno & Colwyn Bay	,, 28	228	270	+ 42	4	929	+ 108
London County Council	Jan. 9	46,725	51,156	+ 4,431	40½	2,243,118	+ 299,822
Maldstone Corporation ..	,, 3	240	288	+ 48	40	9,834	+ 1,048
Manchester Corporation	,, 5	18,835	22,446	+ 3,611	40	834,844	+ 83,126
Nelson Corporation ..	,, 5	205	228	+ 23	40	9,455	+ 877
Newcastle-on-Tyne Cor.	,, 5	6,547	8,149	+ 1,602	40	315,757	+ 46,441
New St. Helens & Dist. ..	,, 2	1,119	1,256	+ 137	27	38,666	+ 9,104
Northampton Cor. ..	,, 4	789	861	+ 72	40	33,758	+ 4,754
Nottingham Corporation	,, 3	3,782	4,602	+ 820	40	177,938	+ 20,392
Oldham Corporation ..	,, 6	2,409	2,802	+ 393	41	115,927	+ 15,299
Portsmouth Corporation	,, 5	2,479	2,472	— 7	..	..	..
Provincial	,, 1	2,136	2,386	+ 250	13⅔	32,291	+ 4,203
Reading Corporation ..	,, 3	878	1,049	+ 171	40	42,322	+ 7,822
Rhondda Tramways ..	Dec. 27	1,638	2,065	+ 427	52	78,942	+ 11,971
Rotherham Corporation	Jan. 9	1,596	1,854	+ 258	41⅓	73,808	+ 10,361
Salford Corporation ..	,, 7	5,487	6,417	+ 930	40⅔	267,135	+ 48,052
Sheffield Corporation ..	,, 6	10,900	12,314	+ 1,414	41	495,503	+ 61,677
Southampton Cor. ..	,, 2	1,675	2,113	+ 438	39⅔	81,862	+ 14,822
Southend-on-Sea Cor. ..	,, 2	673	619	— 54	40	36,398	+ 1,035
South Shields Cor. ..	Dec. 29	871	944	+ 73	39	37,358	+ 4,324
Sunderland Corporation .	Jan. 6	1,712	2,056	+ 344	40	74,086	+ 7,209
Sunderland District ..	Dec 12	594	802	+ 208	6	4,684	+ 905
Swindon Corporation .	Jan. 2	216	283	+ 67	39⅓	10,821	+ 2,565
Torquay Tramways .	Dec. 27	559	715	+ 157	52	34,637	+ 4,130
Tyneside Trys. & Trmrds.	,, 26	615	793	+ 177	26	22,771	+ 5,778
Wallasey Corporation ..	Jan. 5	1,299	1,476	+ 177	40⅔	63,506	+ 8,128
Walsall Corporation ..	,, 5	820	1,027	+ 207	40	39,755	+ 6,389
Walthamstow U.D. Coun.	,, 5	989	1,078	+ 89	40	49,305	+ 5,567
Warrington Corporation	Dec. 20	485	702	+ 217	38	21,582	+ 2,647
West Ham Corporation	Jan. 3	3,085	3,412	+ 327	39⅔	145,975	+ 17,544
Wigan Corporation ..	,, 3	1,889	2,357	+ 468	40	81,002	+ 13,122
Yorkshire (West Riding)	,, 6	1,825	2,288	+ 453	1	2,288	+ 453

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War :—Accrington, Bath, Blackpool, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

Name.	Week or Month.	Latest Return. 1916	1917	Aggregate. Wks.	1917	Increase or Dec.
Anglo-Argentine	Jan. 7	£51,929	£53,008	1	£53,008	+ £1,079
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Nov.	3,430	3,552	32	25,665	+ 125
Brazilian Traction (Mlrs.)	Nov.	7,160,000	7,695,000	47	84,131,000	+ 6,558,000
Brisbane	Nov.	26,740	32,900	47	361,320	+ 4,160
British Columbia .. $	Nov.	472,767	525,629	21	2,368,105	+ 199,679
Buenos Aires Lacroze ..	Dec.	40,106	40,901	26	230,476	— 419
Burmah Tram. & Light Rs.	Nov.	26,824	27,761	17	109,598	+ 4,844
Calcutta .. .. Rs.	Dec. 29	72,478	76,984	52	3,557,777	+ 85
Cape Town	Nov.	..	16,522	..	..	..
Carthagena and Herrerias	Dec.	2,399	4,424	52	49,566	+ 19,776
Cordoba	Sept.	13,313	12,463	26	82,895	— 1,588
East India	Dec.	2,120	1,099	22	6,273	— 4,914
Hong Kong .. .. $	Nov. 17	12,363	12,308	46	622,320	— 243
Kalgoorlie	July	2,521	2,713	30	18,154	+ 696
La Plata	Dec.	4,437	4,606	52	48,963	— 1,874
Lima	Nov.	33,608	37,466	47	397,198	+ 26,199
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras	Dec. 31	40,770	46,646	52	847,320	+ 79,442
Manila .. .. $	June	59,432	73,900	..	..	..
Manaos .. .. Rs.	Sept.	141,286	157,761	..	..	..
Montevideo	Dec.	31,364	34,025	8	65,085	+ 5,317
Pernambuco	Dec. 23	4,200	4,769	50	199,134	+ 39,884
Peruvian .. .. $	Dec.	990,842	1,101,090	26	6,088,270	+ 582,778
Port Elizabeth	Nov.	..	3,807	..	..	..
Rangoon	Dec.	4,904	5,438	52	60,817	+ 2,509
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Nov. 10	12,814	12,797	45	580,690	+ 12,216
Toronto .. .. $	Nov.	911,824	1,052,000	47	10,986,998	+ 1,161,954
Winnipeg .. .. $	Nov.	282,899	305,881	47	3,039,397	+ 16,227

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THE Tramway & Railway World
WITH MOTOR TRAFFIC SECTION

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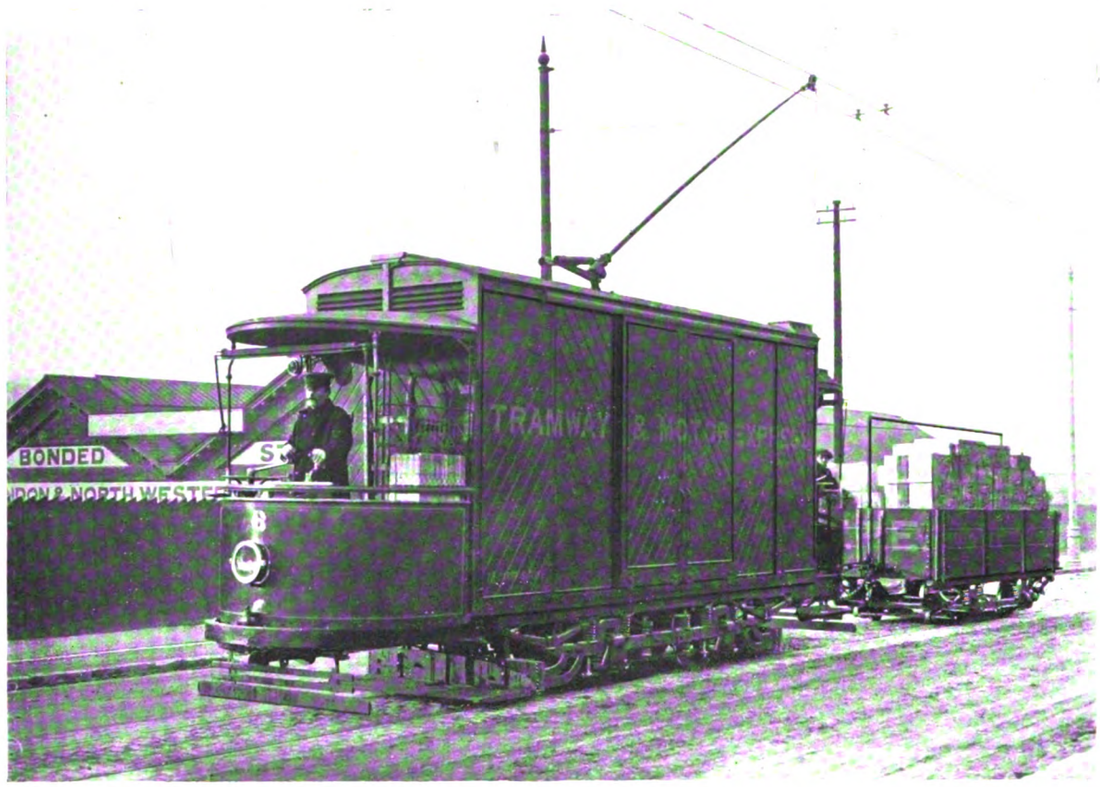
GOODS AND PARCEL TRAFFIC ON TRAMWAYS.

It is not altogether creditable to those interested in British tramways that the war found these undertakings almost wholly unprovided with any arrangements for handling goods and parcel traffic. Most of the tramway Acts contain provisions for such services, but for a variety of reasons little use has been made of the powers conferred by Parliament. Other interests have discouraged the development of goods services, and the fact that the business would require special facilities which would be of a very different character from those which suffice for passenger traffic has been mainly instrumental in preventing general use of the excellent opportunity that tramways offer to handle local goods traffic with convenience and despatch. In the comparatively few cases where a tentative effort has been made to provide a parcel service, the convenience has been greatly appreciated by the public, and it has not been unprofitable to the tramway authorities. Little attempt has been made even in these cases to foster the business, and consequently the growth of the traffic has been small. How much more serviceable the tramways might be at the present juncture if their goods departments had been developed as they might have been is easily seen now that road traffic is so difficult to arrange in view of the scarcity of petrol and labour. The efforts which the Food Committees are now making throughout the country emphasise the importance of tramways for the carriage of goods, and if it were possible to obtain additional rolling stock and to make the other necessary arrangements, we would at once witness a surprising development in this direction. Some progress is, however, being made, and in the near future it is safe to say that tramways will be used much more largely for the transport of commodities than they have been in the past. With the object of showing what has already been done by a few undertakings, and thus indicating the possibilities of tramways for goods and parcel services, the following notes and illustrations are reproduced from various articles that have appeared in our pages from time to time.



A Result of the War—A Goods Train on the Birmingham and Midland Tramways.
(Capacity of Baggage Car, 10 Tons; Trailer, 2 Tons).

When the Tramways Act of 1870 was passed there

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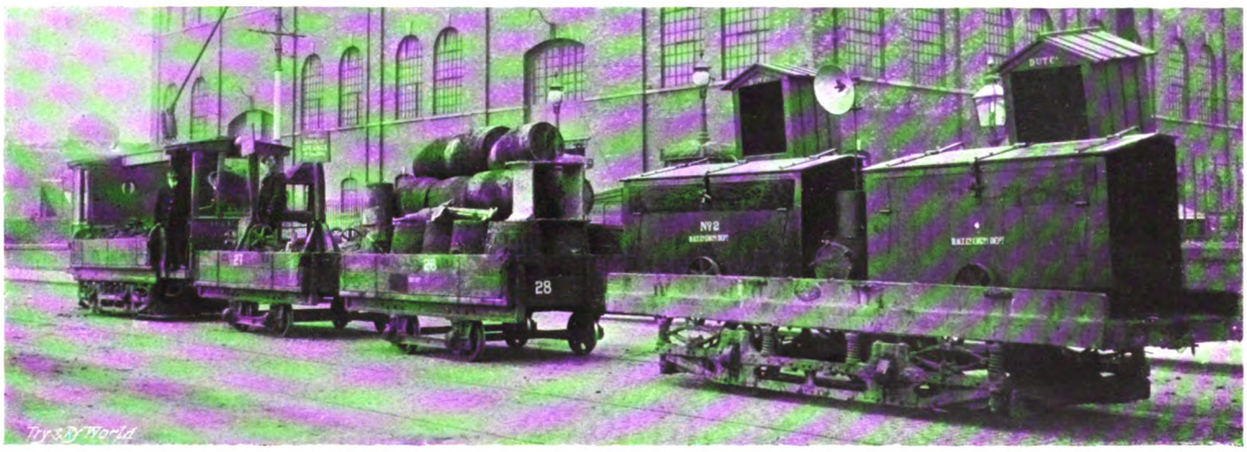
was no doubt a general expectation that tramways would be largely used for goods haulage, and that Act provided for a general merchandise traffic. As is well known, however, the Act provided very inadequate encouragement for the construction of tramways, as its conditions inevitably confined tramways to comparatively populous districts. Had the Act encouraged inter-urban connections, and made it possible or compulsory for adjacent tramway systems to afford one another inter-running privileges, there would have been greater scope for the carriage of goods. That Government did not appreciate the desirability of providing for local transport systems is now seen to have been a most unfortunate mistake, as it is apparent that some better method of collecting and carrying agricultural and dairy produce from districts surrounding large towns would be of inestimable advantage. This is a class of service for which the railways cater very inadequately, as they naturally devote their attention almost exclusively to the traffic between large towns. Consequently considerable areas are almost wholly without any satisfactory means of reaching the markets.

A Goods Train on the Dublin United Tramways.

The whole position was carefully considered in 1896, when the first Light Railway Act was passed. The Government were influenced to pass this Act avowedly by their wish to provide agriculturists with a better means of reaching the markets. The recommendations of the Committee on which the Bill was framed were based principally on two points, the cheapening of the methods of obtaining Parliamentary powers, and the relaxation of the Board of Trade requirements. The Committee considered that impediments to construction might be greatly diminished, and on large portions of the lines they contemplated that regulations previously enforced might be relaxed. But the Act, as is well known, failed in its object—the encouragement of tramway and light railway construction in suburban and rural districts—largely because the aims of the Committee were not realised. All kinds of obstructions were offered, and the Government did very little to assist in carrying out the objects of the Act. Had adequate encouragement been given to the owners of tramways, there is not the least doubt that after the passing of the Light Railways Act they would have made considerable use of it, and that agriculturists would have greatly benefitted, while the general community would have obtained the advantage that cheap transport always provides.

The benefits of a well-planned secondary railway system were demonstrated by the Belgian light railway network, which before the war had been so admirably developed. That system had been the subject of various official reports from time to time, and the facts have often been set out in these columns. Some years ago, the then German Minister of Public Works, in moving the third reading of a Light Railway Law in the German Parliament, said that a traveller in Northern Italy, or in Belgium and Holland, could easily satisfy himself what a blessing the light railways of those countries had been. It was as though irrigating canals had been carried through the fields and everything grew and flourished under their fertilising streams.



A Train Load of its Own Material Carried by the Dublin United Tramways Company.

The whole subject is now receiving the attention of the Reconstruction Committee, and it may be hoped that, as soon as peace is restored, an effort will be made to provide similar facilities in this country. Enough has already been done to show that with a little

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attention and some encouragement the authorities, both municipal and company, would be able to supplement the transport facilities of the country in the most useful way. Meantime the Government's road transport department have been urging tramway authorities to make greater use of tramcars for the conveyance of parcels.

Although, as we have said, few of the tramways which have attempted to deal with goods and parcel service have developed their undertakings to great extent, it is nevertheless a fact that something like half of the more important undertakings have provided a parcel service, and a few have attempted with considerable success to deal with goods.

One of the earliest systems in the country to introduce a parcel service was the Dublin United Tramways Company, and it has been an unqualified success. The arrangements are as follow :—A chief depot is situated at the rear of the general offices in Sackville Street, where parcels are received and despatched to depots in the outlying districts, whence they are distributed either by vans or messengers to the consignees. In connection with this system the company also control and manage the whole of the parcel traffic of the Dublin and South Eastern Railway Company to all that company's stations as far as Greystones, 17½ miles from Dublin, and also deliver in the suburbs all the parcels of the London and North Western Railway Company. The growth of the system may be seen from the fact that in 1883, shortly after the inception of the scheme, the receipts were only £359, while for 1916 they had increased to £9,178. The extent of the facilities which the company provide may be judged from the accompanying map of the company's lines, which extend to Howth in the north-east and to Dalkey in the south-east. The company carry their own mails by special motors and goods trains.

Map of Dublin Tramways Showing Scope of the Goods and Parcel Business.

The accompanying illustrations show the extent to which goods haulage might be developed by all large tramway systems.

Bradford Corporation Tramways have for some years very successfully provided for the distribution of parcels, and in giving an account of the work in our pages, Mr. C. J. Spencer, the general manager, said that when the Corporation took over the tramways of the city, they decided to develop the system on more extensive lines than those which had up to that time been adopted. The question which the Corporation had to consider was whether such a service would be of public convenience and whether it could be carried on without incurring loss. It was felt that if it could be done without loss, however small the profit might be, the great advantage which it would be providing for the public would more than justify the Corporation in undertaking the work. In Bradford, as elsewhere, the project was severely attacked by various parcel carrying agencies on the ground that it involved unfair competition with them, and that it was undesirable for a municipality to enter into a competitive business of this description. It was felt, however, that no private trader could possibly have at his command the existing organisation of a quick service of cars in various directions running at frequent intervals, and that it would therefore be impossible for such a trader to give the public equal convenience at anything like the same cost. Before the Corporation embarked on the enterprise the Tramways Committee collected much useful information as regards the parcel carrying business, and as a result a scheme was devised whereby anyone having a place of business or residence within half a mile of a tramway line could receive or send parcels at certain rates. A central receiving office was established in the centre of the city and sub-offices were opened in various districts. At the central receiving and

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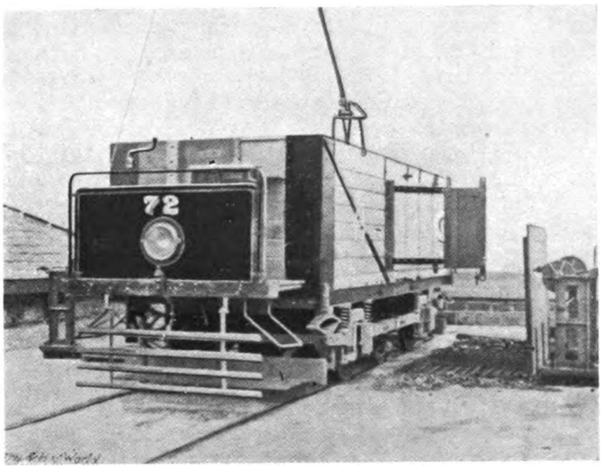
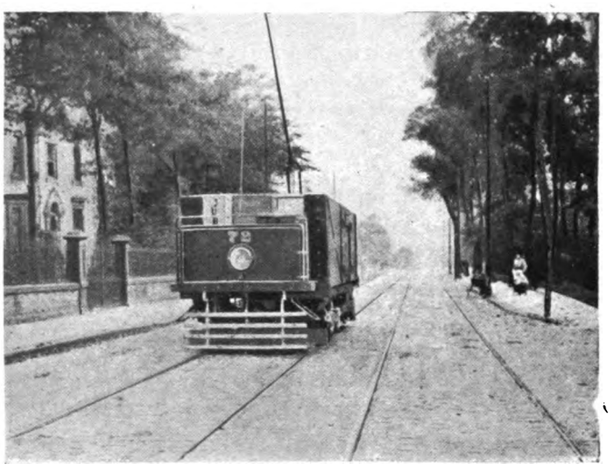
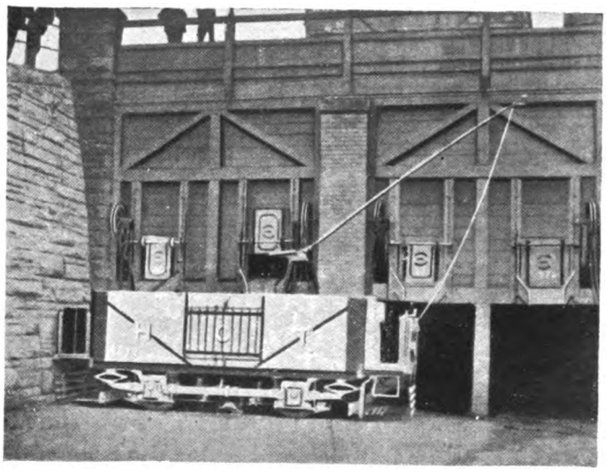


Wagon being Discharged at a Mill.

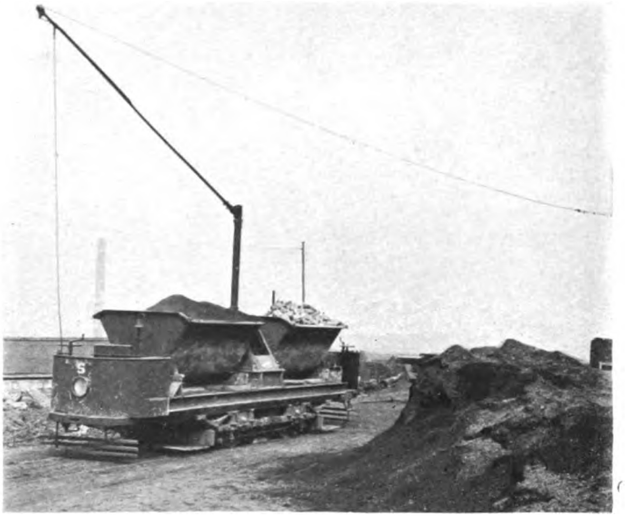


Coal Wagon en Route.

Coal Traffic on Huddersfield Corporation Tramways.



Coal Wagon at the Chutes—Huddersfield Tramways.



Motor Car Hauling Road Material—Bradford Tramways.

Railless Goods Car Being Loaded.

Railless Goods Car.

Bradford Cars Equipped for Working with Energy Supplied from Railless Overhead Trolley Lines or from Accumulators Carried beneath the Platform.

SOME CORPORATION GOODS CARS.

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Central Parcel Depot—Bradford Corporation Tramways.

Transferring Parcels from Depot to Tramway Car.

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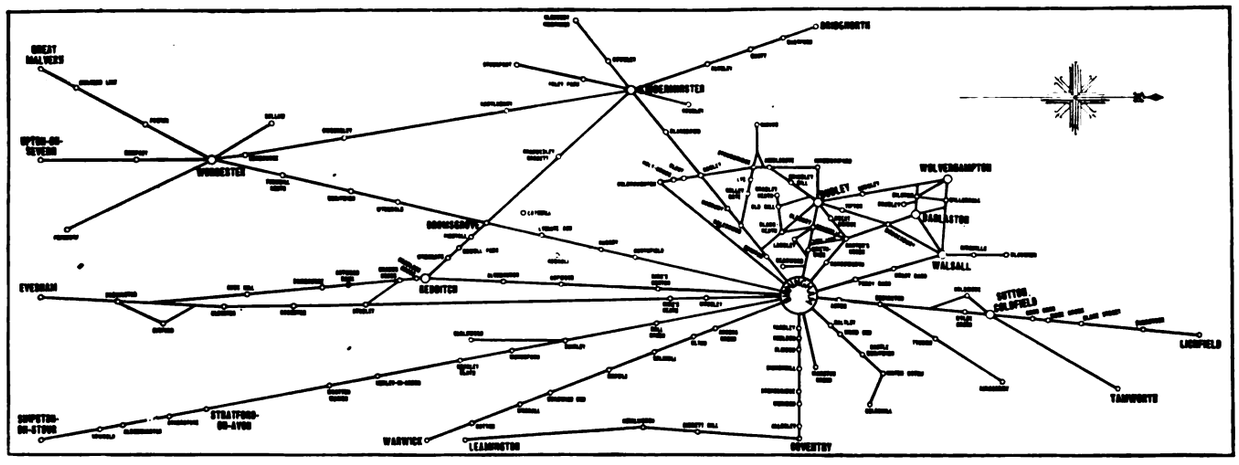
despatching depot each sub-office has its own particular bin, into which parcels for that district are collected. At certain scheduled times the bin is cleared, the parcels are packed in hampers or bags, conveyed in bulk to the sub-offices, and from there distributed. The inward parcels can be handed to the conductor of a car going into the city. A very large business is done for both the wholesale and retail houses in the town, who make use of the system for despatching parcels to their customers. The firms purchase from the department fairly large quantities of contract tickets at a discount rate, with the name of the firm printed on the ticket. The parcels are collected by calling at the shops when required, and are thus brought to the central receiving office. In addition to the ordinary parcel business, a great amount of work is done for the various municipal departments, including that for education, which sends out to the various schools meals for 2,000 school children. A part of the traffic is taken by tramcar, but the bulk is handled by two large motor vans built for the purpose. The baths department also utilise the parcel service, and considerable haulage is done for the drainage department. The work for the latter includes the carrying of paving stones, cement, etc., and

Transferring Parcels from Collecting Van to Tramway Car.

enable parcels to be delivered in Halifax, Dewsbury, and other towns.

One of the earliest schemes for dealing with goods traffic was entered into at Huddersfield so long ago as 1904, when some coal wagons were obtained for



Diagrammatic Map of District Served by Tramway and Motor Express System of Birmingham and Midland Tramways Joint Committee.

is handled by special cars. Many farmers forward their milk to the city by tramcars. Milk cans are placed on the car platforms by the farmer and are delivered to the milk dealers in the centre of the city. Through working arrangements with neighbouring tramways

Parcel Express Warehouse—Birmingham and Midland Tramways.

carrying coal by tramway from the railway to consumers' premises. Long negotiations with the railway companies resulted in permission being obtained for laying tramway lines into the coal yards at Hillhouse, and wagons are now run in and receive the coal direct from the shoots. The Corporation constructed some short lines so as to obtain access to various factories, and a great deal of useful work has been done in this way. The wagons, as will be seen from the illustrations, are similar to railway wagons, but are mounted upon tramway trucks. There is a platform at each end and a trolley standard is erected on the framework of the wagon. The bodies are 16 ft. long, 6 ft. 2 in. wide, and 3 ft. 9 in. deep. The tare weight is 9 tons 12 cwt., and the carrying capacity 10 tons, making a gross weight of 19 tons 12 cwt. The coal is discharged from either side of the wagon, or from a hopper through the bottom.

The most elaborate tramway goods scheme is that of the Birmingham and Midland Tramways Joint Committee, which was inaugurated in the latter part of 1915. The extent of the system may be judged from the accompanying map. Beginning on a small scale with the delivery of parcels, the traffic soon increased in volume, and the business began to be that of a general carrier. Trade packages became frequent, and the tendency was for them to exceed the

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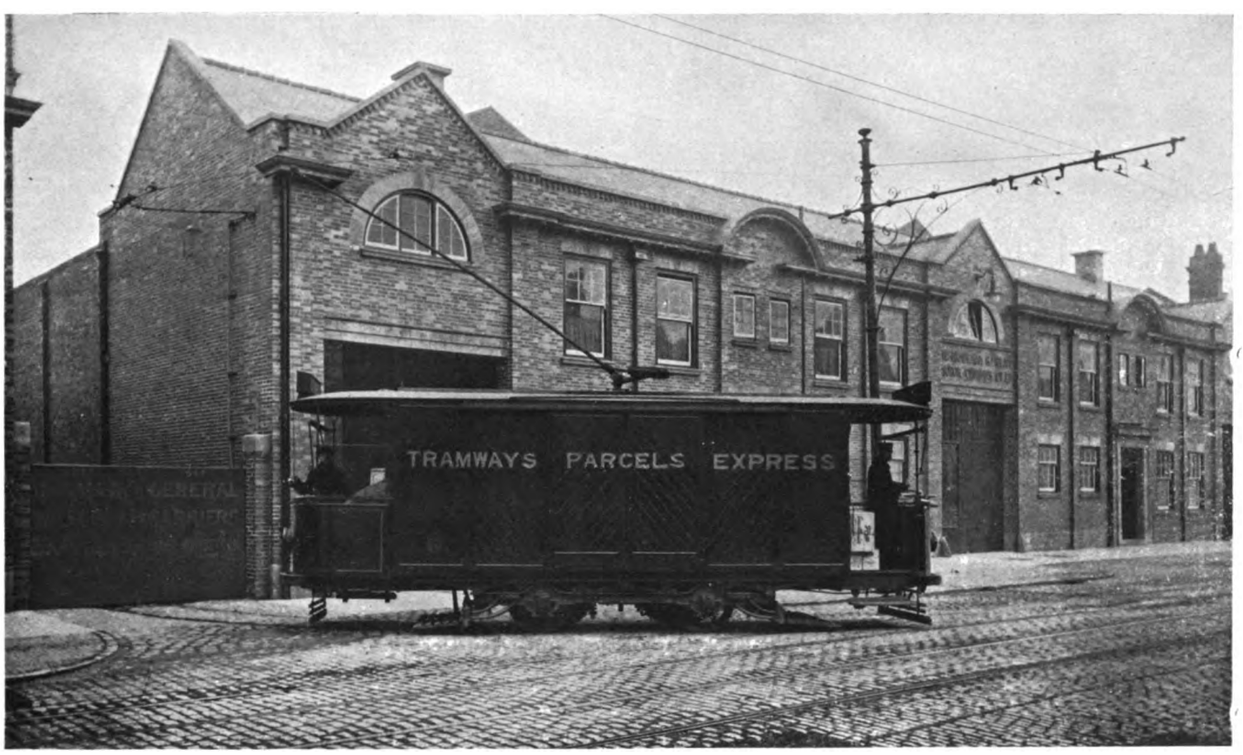
carrying capacity of the ordinary car platform. Hence the plan was evolved of constructing luggage cars which are devoted exclusively to the carriage of this traffic, and run to a schedule time-table between the principal points. At the present time the tramcars are still used to carry parcels on the branch lines, while the main lines are served by the luggage cars, such as that shown in one of the accompanying illustrations. A later development has been the use of a luggage trailer car. The motor car provides capacity for eight tons and the trailer for two tons. An important factor in the success of the parcel express system is that a large percentage of the principal traders' premises are situated on the line of route, and delivery can thus in many cases be made direct from the luggage cars. A large depot has been erected at Bearwood, one of the suburbs of Birmingham, at which the goods and parcel traffic are dealt with exclusively. Every facility is given here for storage, and packages are sent down by rail or canal to be on the spot for distribution immediately on receipt of orders from any firm taking advantage of the system. In conjunction with the tramways there is a large fleet of motor omnibuses working from the garage adjacent to the Bearwood parcel depot. These omnibuses link up all the towns in the vicinity of Birmingham and provide a rapid and convenient means for sending parcels. One result of the war, as far as it relates to the Birmingham and Midland tramways, is to convert the business from an ordinary parcel delivery into a goods business. The company has power to make sidings into works, and it has endeavoured to make use of these powers, but so far no works have been found sufficiently large or enterprising to promise a steady traffic of sufficiently large dimensions to warrant the relatively heavy expenditure that would be required.

Leeds Corporation tramways have for some years handled special goods traffic of considerable extent. The work began with the carrying of sand required in connection with the waterworks department, and the service was subsequently extended to other municipal departments. Special wagons are used and the same speed is maintained as in the ordinary car services. For the Leeds Fireclay Company a large tonnage is carried annually, and the arrangement has proved of great advantage.

For some 15 years the Nice Tramways Company has furnished a good example of what can be done by a tramway with a properly organised goods department. The concession of the company covers urban lines in the city of Nice and the principality of Monaco, and several suburban lines extending to the north of the city, and it has lines running out to the quays at the port of Nice, the latter being used exclusively for goods service. The company provides three classes of goods service: first, the ordinary luggage service, by which passengers are allowed to carry with them 66 lbs. of luggage; second, express goods service; and third, the ordinary goods service. Under the latter, goods are despatched by ordinary trains either in single packages or in full wagon loads. The transport of parcels is effected by light trailer wagons drawn by the passenger cars. The luggage carried over the coast lines consists generally of light but bulky parcels, and includes flowers, fruit, vegetables, etc. Parcels are received at all halts and stations, and there are central stations at the Place Massena and the Place Garibaldi, where parcels are received, receipts given, and the parcels despatched by certain cars or trains as they pass. Parcels are also received for delivery in Nice, notification of their arrival being sent to the consignees, or if desired the parcels are delivered, a small fee being charged for delivery. It is estimated that the working costs of the goods service amounts to from 60 to 65 per cent. of the gross receipts. It is stated that no complaint, either from residents or public authorities, has ever been received of the running of goods wagons attached to the passenger trains, although the trains are running through the centre of the city at all times of the day. On the line from Nice to Contes there is a heavy traffic



Motor Baggage Car of Birmingham and Midland Tramways Joint Committee.

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to a lime and cement works about nine miles from Nice. The same line serves the gas works and several mills. These three industries provide a large tonnage, and are served by special goods trains, of which the number is varied according to the requirements. The work done for the gas company includes the discharge of coal from the ship, the loading into wagons, transport between the port and the gas works, and the discharge of coal into the bunkers at the works. The tracks on the quay enable the wagons to be run up to the loading cranes. The trains are drawn by small electric locomotives. There are three or four locomotives and 20 wagons, and in a day of ten hours 1,200 tons of coal can be unloaded from the ship and delivered into the bunkers. The motor wagons weigh 17 tons empty and have a carrying capacity of eight tons, and they are able to haul five wagons each weighing 5½ tons and carrying 12 tons. Some trains have a total weight of 138 tons and carry from 72 to 80 tons of paying load.

This notice might be extended to a few other undertakings, but the examples to which allusion has been made indicate the opportunity that lies before many of our tramway systems.

A USEFUL SINGLE-DECK CAR.

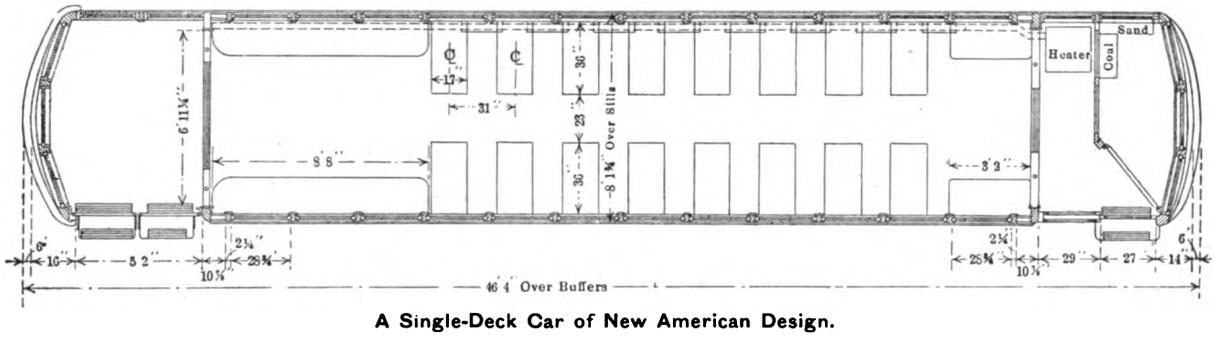
Fertility in devising modifications of car design for the purpose of meeting particular conditions has always been a feature in American street railway enterprise. We here reproduce from the *Electric Railway Journal*, of New York, a plan and some particulars of an interesting type of car that has been adopted as standard for the tramways of the comparatively small cities of Grand Rapids, Michigan, and Akron, Ohio, and which presents some departures from ordinary practice. The body is 33 ft. long over the corner-posts and 46 ft. 4 in. long overall. The construction is of the composite type, with steel underframe and steel sides up to the window rail, and with a wooden superstructure and arch roof. On account of the hilly conditions in both Grand Rapids and Akron the cars were equipped with four motors. These are GE-204 type. The trucks have a 4 ft. 6 in. wheelbase and 33 in. wheels.

The interior arrangement is shown in the accompanying plan. It comprises an open bulkhead construction (an arrangement which would probably not be allowed in this country), and a scheme of cross seats and longitudinal seats which facilitate the ingress and egress of passengers. The bodies are designed for pay-within, single-end operation, and are equipped with doors for closed vestibule working. The rear entrance and exit doors are of the folding type, with folding steps, and the front exit is a sliding door with folding step. The rear exit doors fold outward, and the entrance doors fold inward, and all are manually operated by the conductor from his position at the rear bulkhead, where the two door-operating levers are carried on a centre stanchion. The platform is generously dimensioned to allow for a rapid loading and get-away, and for fare collection after the car has started. A partition on the front platform provides a cab for the motorman, in which all the control equipment is installed, and one sand-box for the left-hand rail only. The sliding door at the front end of the car is manually operated by the motorman.

The sixteen cross seats, the two six-passenger longitudinal seats at the rear, and the two two-passenger longitudinal seats at the front give a total seating capacity of 48. This capacity is attained with a total car weight of 37,624 lb., of which the body accounts for 18,000 lb., the trucks for 11,400 lb., and the electrical equipment for 6,463 lb. The general dimensions, in addition to those shown on the drawing, are :—

Height bottom of sill to top of roof	8 ft. 5¼ in.
Height floor to underside ceiling	7 ft. 6 in.
Top of rail to bottom of side sill	31 5/16 in.
Side posts, centre to centre	31 in.
Seat, bottom length	35 in.
Seat, back height	30½ in.
Rail to first step (front and rear)	17 in.
First step to platform (front and rear) ...	14 in.
Platform to car floor (front and rear) ...	11 in.

The interior of the car is finished in mahogany, with buff-coloured headlining. Eighteen 23-watt plain-bulb lamps without shades are installed over the seats. The wood sash windows are arranged to raise, and the window guards on the outside are divided up in two window sections. The vestibule sashes are arranged to drop into the dash, except the right front window, which is stationary on account of the destination signs. The upper sashes on all windows are stationary.



A Single-Deck Car of New American Design.

The superstructure is almost entirely of wood construction. The outside of the vestibule is covered with No. 14 gauge steel, shaped to cover the bumper. The inside vestibule panels are also made of No. 14 gauge sheet steel, which is finished to match the interior woodwork. The motorman's glazed partition, extending part way across the front platform, is 4 ft. 9 in. wide. This is equipped with a suitable curtain on the inside and a bronze window guard on the side toward the car body.

The main side members of the steel underframe are made of 5 in. by 4 in. by ⅜ in. angle irons rivetted to the bottom edge of a ⅛ in. by 36 in. level steel plate which is continuous from corner post to corner post. A ⅜ in. by 3 in. flat iron is rivetted along the top edge of the side plate. The centre sill is made up with an 8 in. 11¼ lb. channel laid flat, with the flanges extending downward. The 10 in. 15 lb. channels which form the end sills are placed with the flanges extending outward and are securely riveted to the built-up side sills by means of special steel castings and ½ in. steel rivets.

The principal members of the built-up type bolsters are 1 in. by 8 in. steel plates. A 4 in. 5¼ lb. channel is placed on each side of the bolsters, which are placed at 20 ft. 6 in. centres. In addition to these cross-members, there are also six 4 in. channels across the body between bolsters.

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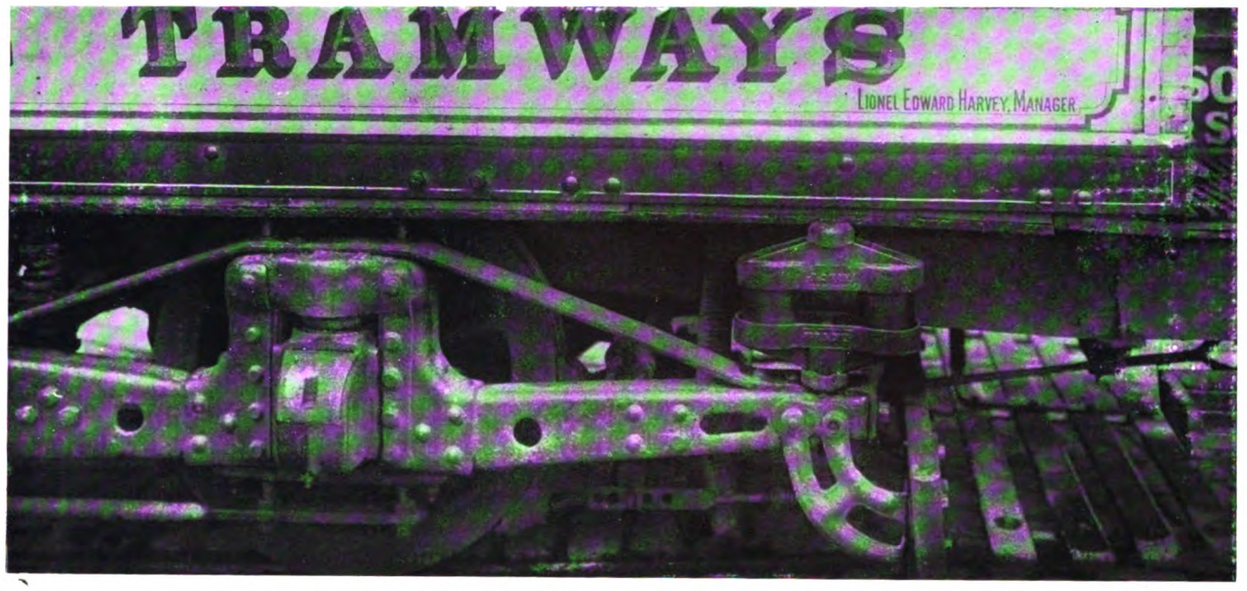
AUXILIARY BEARING SPRINGS.

Messrs. F. R. Rand and Company, of 38, Victoria Street, S.W., have recently supplied to Mr. L. E. Harvey, engineer and manager of the Ilford Tramways, some auxiliary bearing springs. The arrangement consists of four nests of " Parabo " volute springs, one of which is placed at the extreme end of each side frame of the truck, as shown in the accompanying photograph. Each nest consists of two springs wound right and left hand and spaced at 8 in. centres. The springs are in parallel, and are carried in upper and lower castings, and are automatically centred by stop plugs. The castings are bolted through the existing spring buckle holders to the underframe of the car above and to the frame of the truck below. Each set of springs is designed for a maximum load of three tons, beginning with an active range of 10 cwts., and under severe shocks the nest requires a load of six tons before being driven home. Owing to the method of winding the Parabo springs, and their ready absorption of shock, the familiar synchronous movement, owing to the load being taken through one winding, is damped out. Under running conditions with the new arrangement of springs there is a marked reduction in the fore and aft or galloping motion of the car. Mr. Harvey has expressed the opinion that these springs should prove very useful in tramcar work. He has found the elliptic and semi-elliptic springs a source of trouble owing to their shortness, while the unnecessary thickness of the leaves makes the spring too rigid, and it soon suffers from fatigue and crystallises quickly. The new springs are considerably lighter than the elliptic springs.



Auxiliary Bearing Springs Mounted on Truck Frame.

A NAPIER IN RAILWAY SERVICE.

Since our occupation of the Central Railway in East Africa, and before the advent of the railway engines, several Napier lorries were fitted with flanged wheels and were used as railway locomotives. One of these lorries so fitted is shown in the accompanying illustration. The machines are reported as having proved reliable, and they have given such good service that the experiment seems to point the way to a future development of the motor car for rail traffic in after war times.

A Napier Lorry Drawing a Mixed Train in East Africa.

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Trade, which is dealing with the legislative aspects of the matter, and in that connection the vested interests of municipalities will have to be taken into account, but it is clear that if the best results are to be obtained, the system of power distribution will have to be entirely altered. In principle the scheme proposed by the Committee is not new, but legislative restrictions and the powers of local authorities have prevented anything being done except in isolated cases. As long ago as 1900, Power Companies Acts were passed, but the limitations put on the companies have in most cases prevented them from giving anything like the services which our transportation systems and other industries must obtain if the conditions which will exist after the war are not to prove a crushing burden. It must always be borne in mind when discussing the question—and we fear the discussion will be long and acrimonious—that our manufacturers will have to compete with companies in countries where motive power is obtainable at exceedingly low rates. If equal advantages are not provided here it will be impossible for manufacturers to meet the keen competition that will ensue as soon as peace is restored. It is, therefore, earnestly to be desired that the whole question of electric supply may be lifted out of that parochial atmosphere which has hitherto prevented it from receiving that broad treatment for the want of which the industry of the whole country has been greatly retarded.

Economic Production. The Coal Conservation Committee attach special importance to the provision of enormous generating stations equipped with turbine units of very large size, ranging up to 50,000 horse-power each. The stations must have the best facilities for coal and water supply and should be on large sites in country districts. Plant for the recovery of by-products from the coal and for carrying on electro-chemical industries should be associated with them. In the matter of the economy of steam turbines of large size, not very many really big units of the sort are yet in use in this country for driving electric generators. More seems to have been done in the United States in this direction, and some interesting comparisons are given in a paper read before the American Iron and Steel Institute in May last by Mr. R. H. Rice. In that country during the last 14 years the size of turbines has increased from 5,000 KW. to 45,000 KW., say 60,000 horse-power. The efficiency has been increased 100 per cent., that is to say, only half the quantity of coal is required per kilowatt-hour or per horse-power-hour. The improvements have come about through increase in size of the units, improvement in constructional materials, higher speeds, and higher steam pressures, superheat, and vacuum. To return to the sub-committee's report, we would only say here that it bristles with so many interesting details that it can only be fully appreciated by careful perusal. Even apart from economy in coal, the inestimable advantage to the industries of the country, including tramways and railways, are demonstrated in a way which cannot fail to carry conviction. Indeed, the realisation of the scheme will mean an industrial revolution.

Remedies for Overcrowding. A curious effect of the war is that remedies for some of the shortcomings developed in public transit undertakings during the conflict must be sought in methods that betoken an inversion of things as they would be in normal times. Strictly speaking they are palliatives, and their use would be discarded as and when normal times return. The inverted nature of things is especially apparent in the steps that can be taken to prevent overcrowding in public vehicles. Whatever the system of traction may be, complaints of the short distance passenger crowding out the longer journey fares are widespread. While there are two remedial courses open in the case of the motor omnibus, viz., to refuse short distance traffic or to raise the charges, only the latter expedient is possible as regards tramways. In a number of towns the suggestion has been offered that the accommodation should be reserved for half and full journey passengers, but its adoption is impracticable. The reason, of course, is that the statutes governing the operation of tramways render it impossible to refuse admission to people who tender the authorised fares. Even Liverpool's long-standing custom of first-class cars is tantamount only to an increase of fares. Newcastle-on-Tyne, however, for a number of years has sought to stem the

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short distance rush by not permitting halfpenny fares for the inaugural and terminal stages and for the purpose of reducing the pressure on the restricted number of cars in use the halfpenny fare has been abolished for the period of the war in almost every town. The same object, combined with the necessity of meeting the increased cost of working, has governed the widespread expedient of charging higher fares all round. Where omnibuses are operated by companies without statutory powers, there is no legal impediment to a refusal to carry short distance passengers. The pros and cons of this aspect of the overcrowding question were so ably set forth by Mr. Sidney E. Garcke at the annual meeting of the East Kent Road Car Company, that we reproduce his remarks verbatim. Mr. Garcke said :—

Serious overcrowding is occurring, particularly at the rush hours of the day, and if further curtailment of service should become necessary, or the traffic increase, as may happen when the summer months come round, then the company will be faced with a very serious position, and it will be necessary to consider in what manner some of the passengers shall be refused. Imagine an evening car—perhaps the last one—leaving any particular town for the outlying district, a car which, under normal circumstances would be run in duplicate or triplicate. The carrying capacity is about 30, and you may have a crowd waiting to be carried of double that number. It is manifestly impossible to carry them all, and the company cannot under existing conditions put on more machines. The only thing to do is to refuse some. Under the present system only the lucky, or perhaps I should say the strong, who can fight their way on, can be carried. This arrangement cannot be tolerated, and if it becomes worse something will have to be done. Heavy increases in all fares might have the effect of discouraging traffic, but the directors are very loth to take such a course, as it would discriminate unfairly against those who can least afford to pay. It appears to me—I am expressing my personal view—that the only satisfactory solution left to us would be to refuse, at least during the rush hours, all short distance riders. Those who would travel at busy times to villages or outskirts only one or two miles distant can walk, and must, if necessity arises ; and it is better that they should do so rather than that they should occupy seats on the car, leaving standing on the pavement passengers who have to travel perhaps four or five miles and who would then have no alternative but to walk much greater distances.

The conditions so graphically outlined by Mr. Garcke are often just as severely felt by tramway undertakings, and on the whole it is regrettable that his cure is not readily applicable to them. A certain amount of consolation lies in the fact that the circumstances are not permanent ; they will come to an end as fast as additional cars can be put on after the war.

Further Demand by Tramway Workers.—Notices were sent out on January 10 on behalf of all the tramway men and tramway women workers throughout the country, demanding an increase of war wages amounting to £1 per week on pre-war rates. Nearly a hundred municipal and private tramway authorities are concerned, and something like 35,000 workers. The advances already granted range from 8s. to £1 per week on pre-war rates, and it is hoped by the workers to secure a uniform bonus of £1 per week. The Chief Industrial Commissioner is negotiating with representatives of the Union. Negotiations between the National Transport Workers' Federation and representatives of employers have resulted in Sir George Askwith fixing a national flat rate war bonus of £1 for all carters, carmen, and mechanical drivers. In many cases the bonus has already been given.

DEPRECIATION AND WASTING ASSETS.*

Not very long ago the financial affairs of a British citizen were regarded as exclusively his personal and private concern ; his business profit and loss, book-keeping and accounts, were matters into which it was an impertinence for any outsider to inquire. At the present day there is nothing so public as finance. Not only are the balance sheets of limited liability companies and returns on all investments published, but the accounts of every private person are subject to the scrutiny of public officials. The causes of this revolution are numerous and complex. Broadly stated, it is because people have become aware that the methods of creating, distributing, and accumulating wealth vitally affect the national life ; direction of those activities and calculation of their results are matters of public interest.

One of the effects of the great change in the position of finance has been the creation of a science of accountancy, which is gradually evolving out of chaos a systematic method of dealing with the finance of business. The science is still young, and has many problems to solve before a completely satisfactory system of accountancy can be formed. In this book Mr. Leake has essayed the task of reducing to a scientific basis the varied and contradictory practices in the depreciation of business assets.

Capital is the basis of business. In a manufacturing business, for instance, capital must be invested in machinery, buildings, raw materials, and other equipment before a start can be made. To preserve the capital of the business there must be renewals and depreciations of plant employed. Inefficient methods of depreciation have caused the ruin of many a good business and the loss of much capital. Mr. Leake treats this important subject in a masterly manner, stating the results of his investigations, experience, and thinking, with a lucidity which ought to gain for him the gratitude of numbers who have vainly sought to find a clear way through the complexities of the subject.

Before taking up the details of the book, however, we would refer to one serious error. In his preface and elsewhere Mr. Leake assumes that interest on capital and wages to labour are on a par. The assumption is totally false. Interest on capital is profit, but a workman's wages are chiefly the means by which he is enabled to continue working, and are more analogous to the coals of the furnace and renewals of small parts of the plant than to interest on capital. Take a simple comparison. The workman must eat to keep going, and must go clothed to his work, in this country at any rate. His meals, clothes, and housing are expenses necessary to his function. Part at least of his wages therefore must go in expenses. On the other hand, say that Mr. Leake is engaged to lecture in Glasgow, and the expenses incurred going there amount to £5, would he regard the repayment of his expenses as income ?

Serious though the error we have noted is in other connections, it does not in the least affect the value of Mr. Leake's work. He deals with the various aspects of depreciation with remarkable thoroughness, and his exposition of each phase is in a style which might be taken as a model of lucidity and brevity. A valuable series of maxims could be compiled from the book. For example, in Chapter I., on depreciation, he defines the subject thus :—" The term 'expired capital out-

* Depreciation and Wasting Assets, and Their Treatment in Computing Annual Profit and Loss. By P. D. Leake, F.C.A., F.S.S., etc. London : Isaac Pitman & Sons. 10s. 6d. net.

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lay' is an exact definition of depreciation in its commercial sense." In Chapter II., on "Wasting Assets," he says:—"Material held for manufacture and sale are not wasting assets, neither are Stock Exchange securities or land." "Wasting assets always waste when applied to the purpose of seeking profits." Chapter III., on "Fixed and Floating Capital," contains the following:—"Capital can only exist in exchangeable value," "Capital outlay is only long-period revenue outlay," and "Reduction of wasting assets is not reduction of capital." Treating "Economic Cost" in Chapter IV., our author starts with the maxim, "Economic cost is value consumed in producing value," and proceeds to educe conclusions which prove that "depreciation is as much a part of economic cost as wages paid." Chapter V. deals with "The Interest Question" in the same systematic manner, but it is in Chapter VI., which treats of "Industrial Plant—Measurement of Depreciation," we come to the crux of the problem. Here, again, the author's succinct style helps us to illustrate his method in brief:—"Industrial plant is the largest division of wasting assets." "Expiration of time is the proper basis for measuring depreciation." "Cost, less scrap value, should be distributed to revenue equally each year of the whole period. This secures a regular annual charge corresponding roughly with the value consumed each year." "Depreciation provision is not for future renewals, but for past capital outlay expired." "Depreciation is fall in exchangeable value of the whole period of use, and is unaffected by fluctuations in market prices." Practice of these maxims would save many manufacturing firms from much trouble.

In the foregoing chapter Mr. Leake makes a serious proposal. He advocates compulsory registration of plant for measurement of depreciation. We can imagine numerous objections to the proposal, but some means ought to be taken to effect the purpose our author has in view, and if practical men decide that compulsory registration is unworkable, let them devise a practicable alternative. Chapter VII., on "Industrial Plant—Record of Depreciation," further elucidates the proposed compulsory register, considering the various objections likely to be raised against its adoption with scrupulous fairness.

In the chapters following Mr. Leake reviews such subjects as natural raw materials and recurring crops, purchased terminable annuities, purchased terminable concessions, copyrights, patents, and the relation of income-tax to depreciations.

We think, however, that the interest of industrial managers may flag a little over these portions of the book, and would call attention to the three last chapters, which are of the utmost value to managers and proprietors of works and to municipal authorities controlling public utilities. Chapter XIII. treats of "Then Value," and illustrates the difficulties of assessment by a short and clear summary of the case of the National Telephone Company. Chapter XIV. is a "Memorandum and Criticism of the Financial Proposals of the London County Council Report on London Electricity Supply." The examination of the sinking fund proposals of the London County Council is masterly, and should command the attention of municipal managers and committeemen, whether they agree with the author's contentions or not.

Chapter XV. shows the method of depreciation employed for controlled establishments under the Munitions of War Act, 1915, and though suspiciously topical, the subject is of greater than merely passing interest.

Though commending the style of the book as a model of clarity, we do not mean to imply that those people who are accustomed to taking in whole paragraphs at a glance will find it easy reading. Mr. Leake does not waste words, and many passages of his book are tough reading, because they are the concentrated expression of concentrated thought; but to any careful reader the writer's meaning will be clear. Nor can it be said that the book exhausts the subject of depreciation; it raises several questions which are left unanswered. But Mr. Leake must be congratulated on having made a really important contribution to the literature of industrial finance.

MANUAL OF ELECTRICAL UNDERTAKINGS*

In spite of the immense amount of work involved in the preparation of this standard work, it celebrates its majority by coming out up-to-date in every respect. Having noticed the manual every year from its inception, very little remains to be said about it, and we can only enumerate the features of the work referring especially to electric traction. This, as usual, forms the bulk of the bulky volume, and relates to those undertakings all over the world. It may be noted that the Indian, Colonial, and Foreign tramway accounts are converted into English currency throughout, and that an Indian Railless Traction Company was registered in 1913, having its registered offices in Leeds. The electric traction section includes a summary of the industry as described in previous volumes, general information, the total length of lines worked by different methods, lists of light railway orders confirmed, granted, and sought, and of 31 railless systems in the United Kingdom of which ten have been opened. Thirty-two maps of tramway and light railway systems have appeared in former issues, and the large map of power and traction undertakings in the British Isles was issued last year, and copies of it can still be obtained at 10s. 6d. net. The lighting, power, and traction undertakings are given in Section I. They number 1,200, and the details cover 917 pages, traction taking up the greater part. The volume is as complete and indispensable as its predecessors, and it needs no higher praise than this.

THE MAKING OF A TRAMWAY POINT.

This is the title of a handsome book issued by Messrs. Edgar Allen and Company, Sheffield. Not only is it well printed and illustrated, but it conveys much information of great interest to every tramway manager and engineer. The introduction explains the exceptional qualities of manganese steel as to hardness, toughness, and so forth, and shows how well the metal is suited for tramway points and crossings. The first half of the book consists of a series of illustrations showing every stage of the manufacture of a manganese steel tramway point, from the original drawing and the making of the wood pattern, through the processes of casting, dressing, grinding, and so forth, till the finished article is evolved. The second part of the brochure consists of a *résumé* of a paper read before the Tramways and Light Railways Association at Blackpool, in July, 1913, by Mr. Fred. Bland, of Messrs. Edgar Allen and Company. This paper, which is called "1883 to 1913, or Thirty Years of Tramway Practice," is a valuable compendium of the development of tramway rails, points, and crossings. The drawings and half-tone illustrations show the march of progress from the time of the light track of the horse-car days to the substantial construction now used for electric traction. An appendix to the book is a list of what are called "tramway firsts." It gives the dates when many things in connection with tramways first came into use or operation. Some of these are not readily ascertainable, and with the permission of the publishers we hope to reproduce the list in an early issue.

* Manual of Electrical Undertakings and Directory of Officials, 1917-18. Compiled under the direction of Emile Garcke, M.I.E.E., F.S.S. Vol. XXI., 2,000 pp., 50 maps inset, 8¼ by 6½ by 4 inches, cloth, 21s. net (London Electrical Press Ltd., 13, 14, 15, and 16, Fisher Street, Southampton Row, W.C.1).

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THE NATIONAL TRAMWAYS COMMITTEE.

POWERS CONFERRED UNDER THE DEFENCE OF THE REALM ACT.

During the last few weeks events have moved in connection with the Tramways (Board of Trade) Committee, as it is officially called. The Committee has now begun its work, and has held several meetings. Its deliberations are conducted in private. In the earlier part of December there was a good deal of feeling in municipal circles—and, indeed, in some quarters there still is—that local authorities working tramways were not sufficiently represented on the committee. The part of the agitation which took definite shape, and which proved successful, was, however, not municipal, but was promoted by tramway authorities, both municipal and company, in Scotland. Glasgow Corporation Tramways Committee appointed the convener (Mr. Montgomery) and the conveners of the sub-committees with powers to take steps, in conjunction with other tramways authorities in Scotland, to impress upon the Board of Trade the necessity for Scotland being represented on the Tramways Committee.

Direct representation of Scotland was also claimed by the Scottish Tramway Officials Association at a meeting held in Stirling. On the motion of Major Coutts, general manager of Paisley District Tramways Company, a resolution was unanimously adopted pointing out that there was no member directly representing Scottish tramway undertakings who was resident in Scotland, and that owing to the large number of munition workers carried on these tramways, apart from the ordinary public convenience, this might be detrimental to national interests, and urging that Scottish interests should be directly represented. Mr. Dalrymple, of Glasgow, and Major Coutts were appointed as a committee to meet the Board of Trade.

As a result, representatives from Scotland had an interview with the Board of Trade on December 18. The suggestions made were received sympathetically, and Mr. James Dalrymple, general manager, Glasgow Corporation Tramways, was subsequently invited to join the committee. By this addition to the committee the members representing municipal tramways were increased to five, while there are three members connected with private tramway enterprise. On December 24 Glasgow Tramways Committee considered the invitation of the Board of Trade and gave the requisite permission to Mr. Dalrymple to act as a member of the committee.

The committee now consists of the following members :—

James Devonshire (chairman), managing director, London United Tramways, Limited, the Metropolitan Electric Tramways, Limited, etc.
James Dalrymple, general manager, Glasgow Corporation Tramways.
A. R. Fearnley, general manager, Sheffield Corporation Tramways.
A. L. C. Fell, general manager, London County Council Tramways.
J. B. Hamilton, general manager, Leeds Corporation Tramways.
R. J. Howley, joint manager, British Electric Traction Company, Limited.
J. M. McElroy, general manager, Manchester Corporation Tramways.
Stephen Sellon, consulting electrical engineer.
James N. Wilson, Secretary.

By way of reassuring jealous economists, Mr. Wardle, Parliamentary Secretary to the Board of Trade, stated in reply to a question in the House of Commons that none of the members of the committee will be paid, as they are all giving their services free.

The announcement of the delegating of powers to the committee was contained in the following Order in Council amending the Defence of the Realm Regulations, which appeared in the *London Gazette* of December 25, and bore date December 21 :—

(1) The Board of Trade, for the purpose of making the most efficient use of the materials or plant belonging to a tramway or light railway undertaking, with a view to the successful prosecution of the war, may by order require the whole or any part of the rolling stock, materials and plant, including permanent way, of any such undertaking to be placed at their disposal or at the disposal of any person or body of persons named by them.

Where any such order has been made the Board or any such person or body of persons may take possession of such portions of the rolling stock, materials or plant of such undertaking as they may require, and may remove them and make use of them for the purposes of any other tramway or light railway.

(2) Any order made under this regulation may be revoked, extended, or varied as occasion requires.

(3) If any person fails to comply with the provisions of any order made under this regulation, or wilfully hinders or impedes the execution of any such order, he shall be guilty of a summary offence against these regulations.

The Board of Trade Journal of January 3 contained a more precise statement of the duties of the committee than that which had before been published. These duties are :—

(1) To take steps to provide where necessary for the loan or transfer of rolling stock, materials or plant from one undertaking to another.

(2) To determine the relative priority of the demands of various tramway and light railway undertakings for necessary materials and supplies, and to make the necessary arrangements in the matter.

(3) To deal with questions of new or increased services and the maintenance of existing services, and, if considered necessary, to make recommendations for the closing of the traffic of any undertaking, either wholly or in part.

(4) To consider the question of the construction of new lines or the extension of existing lines, and to make recommendations as to the supply of the necessary materials, plant, etc., therefor.

(5) To value the materials and plant which may be released by the reduction of services or the closing of any existing lines, and to advise as to the amount of compensation payable in respect thereof, and the loss in revenue involved, if any.

(6) To consider such applications for the revision of existing statutory tolls and charges of tramways and light railways as may be referred to them by the Board of Trade, and to make recommendations as to the action to be taken.

Representatives of municipal tramways of Lancashire and Cheshire met in Manchester on December 21. Alderman Linsley, chairman of the Salford Tramways Committee, presided, and representatives from the following municipalities attended :—Ashton, Accrington, Birkenhead, Blackburn, Blackpool, Bolton, Burnley, Bury, Chester, Darwen, Manchester, Oldham, Preston, Rochdale, Salford, Southport, Stalybridge, Hyde Mossley and Dukinfield Joint Tramway Board, Stockport, Wallasey, Warrington, and Wigan.

The Secretary (Mr. J. Barnard) read a circular letter from the general manager of the Liverpool Corporation Tramways which had been circulated to most of the

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municipal tramways suggesting that an emergency or vigilance committee should be established to protect municipal interests in connection with the duties of the National Tramways Committee. Mr. J. M. McElroy (Manchester) gave a full explanation of the negotiations with the President of the Board of Trade, and the action taken by the Executive Council of the Municipal Tramways Association in the matter.

The following resolution was proposed and carried unanimously :—Resolved that this meeting of representatives of municipal tramways authorities of Lancashire and Cheshire, having heard the explanation by Mr. McElroy, hereby approve of the action of the Executive Council of the Municipal Tramways Association, and of their selection of members to serve on the National Tramways Committee, and promise their loyal support to such committee in the work delegated to them, and also that the best thanks of the meeting be given to Mr. McElroy for his efforts in this matter.

BIRMINGHAM AND SLEEPER TRACKS.

In connection with the Birmingham Corporation scheme for the construction of new roads, Councillor S. T. Talbot has circulated with the report of the Public Works Commiteee on arterial roads a memorandum by Mr. Alfred Baker, general manager of the Corporation Tramways. Therein the main objections to tramways as at present constructed are set forth as follow :—(1) That the cars are heavy and cumbersome ; (2) they accentuate the congestion of traffic ; (3) they are noisy ; and (4) their size and weight punish the tramway tracks seriously, and the cost of maintenance, both to track and rolling stock, is consequently extravagantly heavy.

The whole of these faults would be almost entirely dissipated by the use of single-deck cars on tracks distinct from the roadway. Mr. Baker estimates that the annual saving from independent sleeper tracks would be £70,000 in cost of reconstruction, repairs, and maintenance of permanent way, £10,000 on repairs and maintenance of rolling stock, and £20,000 in operating expenses accruing from a better time table. Mr. Baker explains that all the noise arises from hammered rail joints, due to the rigid construction of the track. An independent track on sleepers would be more elastic. There would be an absence of pounding of the joints, and the cars would travel practically without noise. The cost of sleeper track would be less than half the cost of ordinary construction. It is proposed that this system shall be followed in laying down a portion of the contemplated new tramways to the Lickey. Several workers of the Corporation have expressed approval of the scheme. Ald. T. Williams, chairman of the Finance Committee, was of opinion that if the people were to be carried to and from suburbs more expeditiously, development along the lines proposed was essential.

In connection with the arterial roads schemes, which were brought before a meeting of Birmingham Corporation on October 16, Councillor Talbot pointed out that during the past ten years Birmingham had spent half a million on haphazard widening, and all agreed that the result was not worth the cost. They were now determined to work on a definite plan. Tramway traffic would in the near future be a formidable problem ; this year the receipts were expected to exceed £1,000,000. The sleeper track system was so successful, so economical, and yielded results so desirable that it was a probability for which provision should be made. A road 110 feet wide would allow that system to be used, but he was convinced that that erred on the narrow side. Separate sleeper tracks would result in a saving of £100,000 in maintenance alone. Councillor Harrison Barrow, chairman of the Tramways Committee, in seconding the motion for the adoption of the report, said the Tramways Committee had approved of the scheme as a whole, but had a doubt as to its introduction in the more central areas owing to cross roads. He believed that the estimate of saving £100,000 annually on track maintenance, etc., would be greatly exceeded. There were frequent complaints concerning the noise of the cars, but it must be remembered that the present track had a concrete bed. The Council has postponed the further consideration of the report until after the war.

Record at Glasgow.—Glasgow Corporation Tramways have made another record. For the week ended January 5, which included the New Year holiday, the receipts amounted to £29,947. The previous best record for a week, made in June of 1917, was £28,107. The mileage open for traffic is 99 miles, the same as a year ago. The number of passengers carried during the week was 8,554,421, an increase of 808,749 as compared with the corresponding week last year. From June 1, 1917, to January 5, 1918, thirty-one and a half weeks, there has been an increase of nearly £100,000 in receipts.

A NATIONAL ELECTRIC POWER SUPPLY: REPORT OF COAL CONSERVATION COMMITTEE.

COAL ECONOMY, CHEAP POWER, AND INDUSTRIAL DEVELOPMENT.

A most important official document was issued at Christmas. It is an interim report on electric power supply in Great Britain by the Coal Conservation Sub-Committee of the Reconstruction Committee, and it outlines a vast scheme of coal saving and electric power development by the establishment of a few huge electric power-stations to serve the whole country, thus superseding the present wasteful methods. In a prefatory note Dr. Addison, the Minister of Reconstruction, points out that important issues affecting municipalities and public bodies are raised in the report. They will be explored in all respects by the Government before any action is proposed to Parliament on the subject. In its legislative aspects the whole matter is being investigated by a committee appointed by the Board of Trade.

In a covering letter to the Prime Minister, Viscount Haldane, chairman of the Coal Conservation Sub-Committee, explains that the report has been prepared by a sub-committee of the Coal Conservation Sub-Committee, and that the latter body have given it their provisional approval. His Lordship also says that it is a matter of grave national importance that action should be taken without delay. Further, he emphasises the conclusions reached by the report.

The report, which is of great length, treats the subject without undue technicality, as its object is to inform the public at large, and so prepare the way for action. The following abstract brings out all the essential features, and gives a large part of the discussion of details. We have inserted cross-headings as an aid to reference.

SCOPE OF THE REPORT.

The report deals first with the extent to which conservation of coal could effect economy in the production of motive power and other forms of energy used for industrial purposes in this country ; secondly, with the expansion of industry which should result, in the way of new manufactures, from the proper use of the coal so saved ; and thirdly, with the steps necessary to attain these objects.

OUTPUT AND CONSUMPTION OF COAL.

The following tables give the annual output of coal, and show the proportion of this that is used for industrial purposes. In 1913 the home consumption was 189,000,000 tons, and it is estimated that to-day the production of power, including railways, absorbs at least 80,000,000 tons.

TABLE I.—COAL RAISED AND CONSUMED IN THE UNITED KINGDOM.

	Mines & Quarries	Mines and Quarries	
	1903.	1913.	
	Tons.	Tons.	Value.
Total output of mines	230,334,469	287,430,473	£145,535,669
Reserved for home consumption*	166,529,120	189,092,369	£94,546,185 at 10s. per ton (a)

* Not including bunker coal for foreign trade.

(a) The value is now higher and not likely to decrease, at least for many years ; hence the importance of the question is even greater than the above figures would indicate.

TABLE II.—SUB-DIVISION OF HOME CONSUMPTION.

	Estimates from Coal Commission Report.	Estimates based on pro rata increase.	
	1903.	1913.	
	Tons.	Tons.	Value at 10s. per ton. £
Railways	13,000,000	15,000,000	7,500,000
Coasting steamers (bunkers)	2,000,000	2,500,000	1,250,000
Factories	53,000,000	60,000,000	30,000,000
Mines	18,000,000	20,500,000	10,250,000
Iron and steel industries	28,000,000	31,000,000	15,500,000
Other metals and minerals	1,000,000	1,250,000	625,000
Brick Works, Potteries, Glass Works and Chemical Works ...	5,000,000	5,750,000	2,875,000
Gas Works	15,000,000	18,000,000	9,000,000
Domestic	32,000,000	35,000,000	17,500,000
Total	167,000,000	(say) 189,000,000	£94,500,000

The average coal consumption per horse-power hour throughout the country has been halved during the last twenty-five years. In

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spite of this the total amount used has increased. A consideration of the probable future development of British industries shows that it is not so much by reducing our total coal consumption as by increasing our industrial output for a given coal consumption that progress will be made. Unless this result is attained we shall be faced with the necessity of doubling our coal output or reducing our coal exports to nothing. But the present coal consumption would, if used economically, produce at least three times the present amount of power.

To Increase Output of Workers.

It is obvious that improvement in the commercial prosperity of a country—that is to say, the average purchasing power of the individual—depends on increasing the output per head. The only way to increase prosperity is to increase the net output per head of the workers employed (*b*).

In the United Kingdom in 1907, according to the Census of Production, the average "net output per worker" was £102 per annum, and since this sum has to provide not only the wages of the worker, but all establishment charges, including interest on capital, it is clear that the average wage must be something very much less, probably little more than half. Now it is possible to increase the output per head by harder work on the part of each individual, but there is far greater promise in increasing his output by giving him more machinery.

How to Raise Wages.

In the United States the amount of power used per worker is 56 per cent. more than in the United Kingdom. On the other hand, not only are the standard rates of wages higher in the U.S.A. but living conditions are better. The best cure for low wages is more motive power. Or, from the manufacturer's point of view, the only offset against the increasing cost of labour is the more extensive use of motive power.

Individualistic *v.* Collective Methods.

One question which has been settled conclusively during the past fifteen years is that the most economical means of applying power to industry is the electric motor. Thus the problem is how best to generate the electric power.

In Great Britain the problem resolves itself into the most economical production of electric power from coal. Broadly speaking, there are two alternative methods, namely, what may be termed the individualistic method and the collective method. In the first case each manufacturer generates his own electric power, generally in a power-station situated in his works; in the second the power requirements of a large number of individuals, in fact, of the community, are pooled and dealt with collectively.

In the case of the individual method the prime mover, or generating plant, is rarely situated in a position convenient from the point of view of coal and ash handling facilities, or where there is a plentiful supply of water. The plants are small, occupied for a small portion of the day only. As a consequence the capital cost of the plant is of undue importance as compared with the cost of coal, with the result that cheaper and less economical plant is used, since it pays to save money in capital and spend it on coal.

In the case of the collective method, the economy of carrying out electrical transmission on a large scale enables the plant to be placed on a site offering the best water and transport facilities. The pooling of loads admits of the use of large electrical generating machines, also essential to economy, and the load is more regular. As a result the power-station can be operated at maximum economy throughout the twenty-four hours. The amount of energy produced per horse-power of plant installed is much greater. As a consequence the cost of coal is the predominating factor in the total cost, and the installation of the most economical plant is justified.

Electrical Industries.

Now it is certain that arrangements ought to be made in the near future for the manufacture in the United Kingdom of many products necessary for the development of the industrial community, which require large amounts of electric power at very low cost. We have available in this country, if only we will use our present coal production economically, a source of power more than equivalent to the water-power at present used in other countries, such as Norway and Sweden.

Individual Power Plants.

While in one or two industrial districts the generation and distribution of electrical power are being developed on correct lines, it is still broadly true to say that, as regards the country as a whole, the requirements of each municipal area, each railway, and each factory are dealt with separately, with the result that the average size of generating machine employed is certainly not more than a tenth of what it ought to be. Under such conditions economy in coal consumption is impossible.

A conspicuous example of the necessity of the multiplication of individual power plants, which has arisen from the fact that no large central supply was available, is afforded by recent additions to the power-stations of London, with the result that within a distance of four or five miles from Hammersmith the following power-stations have been erected in addition to 21 others already existing:—

	Kilowatts
London and South Western Railway (Wimbledon) ...	25,000
Lots Road (Chelsea)	63,000
Central Electric (Grove Road)	22,000
Metropolitan Railway Company (Neasden)	25,000
Metropolitan Electric Supply Company (Willesden)	21,250
London and North Western Railway (Stonebridge Park)	25,000
Central London Railway (Wood Lane)	7,500
Great Western Railway (Park Royal)	6,000

With the exception of Lots Road, all these additional stations are badly situated as regards water facilities, and they might all have been advantageously combined on one site with great economy of capital, labour, and coal.

Unsatisfactory Municipal Plants.

The position of large local authority undertakings in the Midlands is most unsatisfactory. Their power station sites have been primarily selected from the point of view of retaining the works within the city areas, so that the "rates" on such works may be retained by the operating local authority. None of the undertakings of Birmingham, Liverpool, Manchester, or Sheffield have sites with proper water and condensing facilities. The whole of these undertakings use cooling towers. These undertakings generated during the last twelve months between 600 and 700 million units. While the present position is most unsatisfactory, the future expansion of these undertakings gives rise to still greater apprehension. Important extensions on new sites are already projected, the additional plant proposed aggregating some 300,000 KW. to 400,000 KW. In the case of Birmingham, the new site chosen is within the city boundary, and the condensing facilities are limited to cooling towers, and owing to shortage of water supply raw sewage effluent will have to be used for "make-up" purposes. In the case of Sheffield, the new site, which is the subject of a Parliamentary inquiry, adjoins the city boundary, and cooling towers for dealing with a 50,000 KW. demand will have to be used.

How to Secure Economy.

The use of electric power, generated in central stations, for all classes of work would show a considerable increase with the decreasing cost of electricity so generated (*c*). If power is to be supplied throughout the country at the lowest possible price, the following conditions must be secured:—

(1) The power users in each industrial district must be supplied from one common inter-connected electrical system.
(2) Large generating machines, not less than 20,000 H.P., must be used, and they must be erected in the best possible positions for economical production. In the more important industrial districts generating machines of 50,000 H.P. might be advantageously used.
(3) Power available from surplus gas or waste heat should be turned into electrical energy on the spot in local plants which would feed into the main distribution system.

On account of the compact nature of the country such a system is commercially practicable and advantageous here to a greater extent than it would be in other countries.

Other Benefits from Centralisation.

There are important additional advantages to be secured from the erection of plants on roomy and efficient sites, apart from those resulting from the increase in the size of the plant:—

(1) Centralisation of production materially facilitates supervision, and ensures the better operation of any given plant.
(2) The health of the great industrial centres and the congestion of the railway lines in their neighbourhood would be radically improved.
(3) By locating either the main or supplementary plants at or near the collieries much coal that is now wasted or left in the pits could be profitably utilised, and the coal which would otherwise be burned to transport the coal would be saved.
(4) By-products obtainable from the coal before it is consumed in the boiler furnace, or producer, could be extracted in any case where it was proved to be economical to do so.

Apart from the saving in fuel, centralised power production is essential if the capital charges and labour costs are to be reduced to a minimum. The economy of a combination of all requirements, power, traction, lighting, and heating, is fundamental (*d*).

At the present time the supply of electricity in Great Britain is dealt with by some 600 undertakings. The average generating

(*b*) The net output represents the value added by industry, and is obtained by deducting from the selling value of the article at the factory the cost of material used. Figures for gross output are subject to error due to overlapping, but the figures of net output per worker are not subject to this error, or at least not to so great an extent.

(*c*) The use of electricity for motive power purposes has been specially emphasised, but electrical smelting and electro-chemical processes are becoming increasingly important.

(*d*) To show how far we are from this ideal the case of London is instructive. A man lives, say, at Hampstead; he cooks his breakfast (if he can buy electricity sufficiently cheaply) by electricity supplied from one station; he travels to his office by electric train supplied by electricity from another station; his office in the city is supplied by electricity from a third station; probably he gets his lunch at a restaurant supplied by electricity for light, etc., from a fourth station; if he has to go out of the office and visit other people in the afternoon he travels probably by a tram supplied by a fifth station; he may eat his dinner at night in a West End restaurant supplied from a sixth station, go to a theatre supplied from a seventh station, and so on. So that an inhabitant of London may quite well require throughout the day anything between five and ten different sets of plant to supply his needs. In other words, the capital costs of supplying him are increased five or ten fold.

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plant capacity of those undertakings which have power-stations is 5,000 H.P., or about one-fourth of the capacity of one single generating machine of economical size, and about one-thirtieth of the size of what may be considered as an economical "power-station unit." Table III. gives some particulars of electricity supply in London.

TABLE III.—LONDON ELECTRICITY SUPPLY. POSITION IN 1913 (*e*).

	Central Area.	Greater London.
No. of authorities	39	70
No. of generating stations (*f*)	41	70
Average size of stations	7,646 KW.	5,285 KW.
Average size of units	787 KW.	632 KW.
No. of types or systems of generation...	31	49
No. of frequencies	8	10
No. of voltages { generation	20	32
No. of voltages { distribution	21	24
No. of methods of charging and prices	50	70

(*e*) Slight changes have taken place since 1913, when the above table was prepared for the L.C.C.

(*f*) In addition there are nine traction stations within the Greater London area, eight of which are within the central area.

This haphazard multiplication of small generating plants situated in the middle of towns renders it impossible to obtain those advantages which have already been described. The time has now arrived for the matter to be considered comprehensively. To utilise plant existing at the present day to the best advantage is by no means an easy problem. The main transmission system must be alternating current, three-phase, at a high voltage, but a more difficult question is that of frequency; in Great Britain no less than ten frequencies are employed to-day. A division of England and Scotland into areas having frequencies of 50, 40, and 25 cycles respectively, represents the least amount of scrapping of existing plant consistent with development on right lines. Roughly speaking, England, south of a line between the Humber and Carlisle, could be run at 50 cycles, with the exception possibly of the Black Country; between this line and the Cheviots might remain at 40 cycles, whilst the whole of Scotland could be standardised at 25 cycles. The chief difficulties are, however, not technical ones, but what may be called political.

SMALL AREAS VERSUS LARGE.

In order to illustrate the inefficiency of the present system, a list of the average prices received for current by a number of representative municipal undertakings in the Lancashire industrial district is given in the following Table IV., and compared with the average price paid by consumers on the North-East coast. The Lancashire group has been taken because it is a very favourable example of an industrial area where coal is cheap and the load is good, i.e., large and compact, and where therefore the conditions for cheap supply are favourable. Lancashire is probably the largest and most intensely industrial district in the world.

TABLE IV.

AVERAGE PRICES CHARGED TO CONSUMERS BY ELECTRICITY UNDERTAKINGS IN THE LANCASHIRE AREA. (*g*)

Corporation.	Private Supply.	Public Lighting.	Traction Supply.	Total Supply.
	Pence per unit.	Pence per unit.	Pence per unit.	Pence per unit.
Liverpool	1·82	1·88	1·13	1·50
Manchester	1·02	2·11	1·03	1·02
Eccles	2·17	2·18	1·13	1·71
Salford	1·31	1·35	1·27	1·29
Stretford	2·27	1·14	1·13	1·49
Stockport	·90	·50	·55*	·80
Bolton	1·03	—	1·10	1·05
Bury	·67	2·24	1·08	·72
Heywood...	1·30	3·00	1·25	1·29
Leigh	1·65	—	—	1·65
Rochdale	1·33	—	1·01	1·20
Wigan	1·50	2·26	1·19	1·38
Ashton	·72	1·37	1·22	·85
Oldham	1·42	1·99	1·50	1·44
Stalybridge†	·67	1·10	·50	·66
Accrington	1·12	2·59	1·75	1·15
Blackburn	1·63	1·95	1·39	1·58
Burnley	2·00	1·11	1·18	1·49
Colne	2·25	1·00	1·63	2·00
Darwen	1·22	3·17	1·27	1·29
Nelson	2·68	—	2·00	2·42
Rawtenstall	1·16	2·69	1·23	1·03
Middleton	1·31	4·35	1·32	1·32

(*) Does not include any capital charges. † Joint Board.

The figures may be compared with those for the North-East coast district of England, where the entire area, somewhat larger in actual square mileage and much smaller in population and in power requirements, and therefore less advantageous from a supply point of view, is served by a group of power companies from one interconnected electrical distribution system. The average price paid for electrical energy is less than ½d. per unit, and the use of electric power per head relative to the population is three times as great. Here we have a clear cut example of the difference between dealing with a group of towns on the individualistic system and on the collective system. The position five or ten years hence is certain (if present policy be continued) to be still more striking, for the North-East coast has an up-to-date system capable of indefinite development, whereas the Lancashire area cannot develop without having to scrap an increasing amount of inefficient and unsuitably placed plant.

While it might be feasible for local concerns, whether municipal or company, to retain, as separate bodies, the ownership of mains and the business of supplying lighting and small power consumers, the generation and main transmission and distribution of electrical energy and the business of supplying power to manufacturers, railways, and other large users must, in each industrial district, be in the hands of one organisation.

The proposal to link up adjacent power-stations is a step in the direction of greater economy, and should be encouraged, provided it is appreciated that it is only a step. To have as a permanent arrangement a large number of undertakings each operating its own system in a small area is as hopeless as to contemplate a railway system on the basis of "running power" agreements between a host of municipalities.

It has been frequently proposed as an alternative to mere linking up that bodies should be created which would deal solely with bulk supply, existing authorities being compelled to take all further electrical energy beyond what they can generate in their present stations from the new bulk supply system, and being allowed to run their existing stations as far as they desire to do so for a period of years. The disadvantages are:—

(1) That it would take much longer to make a change over to economical generation, on account of the tendency of the existing bodies to wish to keep their own plants.
(2) That the delay in the transfer of the load would prevent the greatest economies being effected.
(3) That when the transfer was complete the existing bodies would be left with indifferent plants which had become obsolete.
(4) If the existing stations were owned or operated by different bodies they would not be of so much use for standby and peak load purposes as they might otherwise be.

THE SAVING OF COAL.

It has been shown that the present coal consumption for power purposes alone (see Table II.) which would be effected by the change amounts to at least 80 million tons. If a comprehensive system were inaugurated it may be confidently stated that on the basis of the extent to which power is used at present a saving of 55 million tons of coal per annum can be expected. Taking the value of this coal for export purposes as 10s. per ton, the national annual advantage of the change, available for interest on capital is, say, £27,500,000 in coal alone. Alternatively, if this 55 million tons of coal were used for extended and new industrial processes, some 15 million horse-power continuously throughout the year would be available for the purpose.

This saving of £27,500,000 per annum takes no account of the following additional and important advantages which would directly result from the establishment of an efficient electric power supply system throughout the country:—

(1) A reduction in the cost of transport in carrying coal.
(2) A possible saving in coal consumption for domestic purposes.
(3) The reduction in the cost of coal handling involved in house-to-house delivery and general distribution.
(4) The great advantages and economies which would result from the more extended use of electricity in the household for heating, cooking, and cleaning purposes, reduction of smoke, increased cleanliness, etc.

(*g*) In Table IV. the average price for private supply, public lighting and traction are given separately, and from this sub-division another interesting phenomenon is disclosed namely, that where the municipality supplies electricity for public lighting and to its own tramways, the charges made to itself for these supplies are frequently excessive. In the case of Accrington, the private consumers pay an average of 1·12d. per unit, while the public lighting is charged 2·59d., and the tramway undertaking 1·75d.

The price charged for electricity should be based upon the nature of the load to be supplied (the load factor), and as the conditions in this respect of the traction and public lighting services are at least as good as, and in many cases better than, those of private users, the former should be charged less, not more, than the latter. The reason the lower price is charged for private supply is that without it no power business would be done at all, and since such undertakings cannot supply at such low figures except at a loss, they are compelled to charge their public services an artificially high price, or, in other words, through the medium of these services they make up the loss out of the rates.

There might be some justification for subsidising the private power supply user at the expense of the public services if it had the effect of developing the use and supply of electrical energy on correct lines, but when it has exactly the opposite effect such a policy is not justified; in fact, the municipal undertaking charges a lower price to private consumers than to its own public services in order to keep out other competitors from the power business. In other words, the price is fixed just low enough to maintain a reasonably good case for allowing the municipality to retain its monopoly. There are numerous examples of this kind throughout the country.

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(5) The possibility of utilising the coal at present left in the pits or otherwise wasted.
(6) The possibility of extracting by-products.
(7) The increase in railway electrification, with its attendant advantages.

All these savings and advantages taken together show a total possible national advantage which can hardly be put at less than £100,000,000 per annum, apart from the manufacturing and industrial advantages of a cheap and efficient electric power supply.

The Failure of Electric Power Acts.

It may be asked why it is that the so-called power companies working under Power Acts have not had a greater effect in developing power supply on correct lines. The so-called "Power Act" legislation was faulty in certain important respects. Parliament was apparently afraid to insist on the amalgamation of the existing lighting enterprises. Parliament therefore devised the existing form of Power Acts, which is complicated and unworkable. The special clauses these Acts contain were accepted by the existing lighting authorities because they thought they would have the effect of keeping out the power companies, while the power companies in accepting them hoped they would have the effect of bringing in the lighting authorities as their customers. In the result the electric lighting authorities in the majority of important districts have, from their point of view, succeeded in practically stopping the growth of the power companies, except in one or two cases.

What is required is :—
(*a*) The establishment in each industrial district and neighbourhood of one electricity body owning and operating the electricity supply system ; and
(*b*) That the generating machines should be of large size and the power plants be located in the most suitable positions.

In order to secure, even on existing lines of development, the more correct extension of electricity undertakings as the demand grows, it has been proposed to appoint Electricity Commissioners. While this step is certainly desirable, it is considered that this proposal does not go far enough, and would not result sufficiently rapidly in the establishment of a comprehensive electricity supply system.

Appointment of Commissioners.

What is required is not only the appointment of Commissioners, but the instruction to them to arrange in each district for the establishment of one electricity body owning and operating the electricity supply system, this body, except possibly for dealing with lighting and small power consumers, to take over all existing stations and mains, running the whole electric power supply system for the district, and at once making arrangements for the generation of power on a large scale, preferably from super-stations, erected also for dealing with the new processes already referred to.

This raises the question as to whether in arranging for such new body to take over the electricity supply business in any given area the business should be dealt with by the State, by municipal enterprise, by private enterprise, or by a combination of these.

An analysis of the existing situation in the industrial areas of the country indicates that there are very different conditions in the different areas as regards municipal ownership. In some of the areas the important plants are almost entirely owned municipally, and the power companies are only just making a start in outlying districts ; in one or two areas the power companies already are commencing to own the whole business, and only a few of the towns are omitted. It would therefore appear that one solution is not necessarily applicable to every area, and there might be advantages from a national point of view in allowing development in some districts on one line and some on another. What is essential is that the national policy should be changed. The aim in the future must be to concentrate under one authority for each industrial district, firstly, the main distribution system, and, secondly, the responsibility for the location of the generating machinery in the most economical positions.

The fact that, with one or two exceptions, there are practically no modern electric power generating plants in the country, has been a serious handicap during the present war. Not only has the absence of such plants made it impossible to manufacture many products which it would have been possible to have manufactured in this country during the war, but inefficient generating stations have had to be rapidly extended. If there had been half a dozen large modern efficient plants in existence at the commencement of the war, many large manufacturing works which have been kept busy manufacturing makeshift power plant apparatus would have been available for other purposes.

Existing generating plants are uneconomical and ought to be scrapped, but this cannot be done until more modern plants are made available. If, however, such plants were established and running, and it were therefore possible to recommend existing authorities to connect up to these big plants, and they were sure of being able to get power at short notice if they did so connect up, the position would solve itself on purely economic lines.

Recommendations.

(1) It is essential that the present inefficient system of over 600 districts should be superseded by a comprehensive system in which Great Britain is divided into some sixteen districts, in each of which there should be one authority dealing with all the generation and main distribution.

(2) Centres, or sites, suitable for electric generating purposes should at once be chosen on important waterways as the future main centres of supply for each of the districts into which the country is to be divided.

(3) The sites so chosen should be as large as possible, having in view the land available in suitable localities, and should have ample water and transport facilities. Land is required not only for the power-stations themselves—which for the sake of security and safety would have to be suitably sub-divided, that is, they would not be contained all in one building—but for the processes involved in the extraction of by-products from the coal before it is used for the production of power, where such extraction is found to be justified. It is also required for the development of electro-chemical processes, which may be most conveniently carried on in close proximity to the power plant. This condition entails the sites being chosen outside, not inside, towns. (The health of the great industrial centres and the congestion of the railway lines in their neighbourhood would be radically improved by arranging that the conversion of coal into motive power was carried out away from the densely populated centres.)

(4) Plans should be prepared for the construction immediately after the war on these sites of the first instalment of large super-power plants, capable, first, of supplying, through a comprehensive electric power distribution system which must also be arranged for, the existing demands of the community ; and, secondly, of supplying electrical energy at the lowest possible price for new processes and manufactures.

(5) Such plants would be designed so that, as methods are perfected for extracting by-products from the fuel, before using it for the purpose of the production of electric power, the by-product plant can be combined with the power plant. Each site should be laid out with this in view, and with a view to the unrestricted extensions of the plant as required.

(6) Power available from surplus gas or waste heat should be turned into electrical energy on the spot in local plants which would feed into the main distribution system. As regards waste coal—i.e., coal which it does not at present pay to bring to the surface—this could, where transport was the ruling consideration, also be used on the spot.

(7) Once these plants are in existence it would be possible for existing authorities, without any risk of being left in the lurch, to stop extensions of their own uneconomical stations, situated as they mostly are on cramped and unsuitable sites, and to arrange to take their power from the main system.

(8) With a view to carrying out the policy advocated a Board of Electricity Commissioners should be appointed, with full powers to deal with the electricity supply situation throughout the country. They should have power, *inter alia*,

(*a*) To stop the extension or multiplication of uneconomical stations for public supply.
(*b*) To arrange for the handing over, on equitable terms, of the generation, transmission, and main distribution system in each of the areas into which the country is to be divided, to a new electricity body appointed for that area.
(*c*) To standardise for each area the frequency and voltage of the main transmission and distribution system.
(*d*) To settle for each area whether such body should consist of a Parliamentary company working under adequate control as regards limitation of dividends, etc., or one of the other alternatives given in Appendix C.

(9) Alternative types of the new electric power organisations are described in Appendix C. In reference to these alternative types the sub-committee are impressed with the special need for initiative and resource in the management of the business of power supply, and they are of the opinion that the freedom of range and keenness which are distinctive of private enterprise will be found to be in a high degree conducive to the fullest measure of success. The sub-committee consider that if the nation is to get immediately an efficient power supply, and is to take advantage of the temporary lull in manufacturing output immediately after the war, State assistance in some form may be necessary.

The report is signed by Charles H. Merz (vice-chairman), William A. Bone, Guy Calthrop, John Kemp, R. A. S. Redmayne, and Charles P. Sparks.

Appendices.

There are five appendices to the report. Appendix A contains statistical tables and other information bearing on the question of the consumption of coal per horse-power-hour for power purposes in the United Kingdom. The conclusion is reached that the consumption is about 5 lb. per horse-power-hour. If this were reduced to 1½ lb., which is the rate of consumption in the North-East coast generating stations, the annual coal consumption for power production would be reduced by 56,000,000 tons.

Appendix B contains a record of electric supply legislation, and shows how the Electric Power Acts have been a failure.

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Appendix C discusses alternative types of electric power organisations to deal with the supply of electricity in each of the areas into which the country should be divided.

Appendix D consists of a paper read by R. P. Sloan before the British Association at Newcastle in 1916, dealing with fuel economy on the North-East coast as a result of electric power supply.

Appendix E contains a memorandum by the Association of Electric Power Companies suggesting the appointment of an Electricity Commission to which all matters of moment affecting the industry would be referred.

FINANCIAL REPORTS AND MEETINGS.

Coventry Chain Company, Limited.—The board have announced a final dividend of 7 per cent., and a bonus of 3 per cent., on the ordinary shares, making 15 per cent. for the year.

Edison Swan Electric Company, Limited.—The profits for the year ended June 30 last amounted to £18,694, and after payment of munitions levy and writing down expenses of a new issue, £13,267 is carried forward.

Yorkshire (West Riding) Electric Tramways Company.—The directors have decided to pay on January 1, 1918, a final dividend of 3 per cent., being at the rate of 6 per cent. per annum, on the 6 per cent. cumulative preference shares.

Manila Electric Railroad and Lighting.—The accounts for 1916 show net earnings of 758,654 dollars. After providing for fixed charges, placing 43,783 dollars to sinking fund, and 80,000 dollars replacements and renewals, and paying 6 per cent. dividends, surplus 918,430 dollars, and reserve accounts 762,309 dollars.

Scarborough Central Tramway.—Alderman J. Pirie (chairman), at the annual meeting of the company on December 5, regretted that the board were not able to recommend even a small dividend. The reason was because of the arrears of repairs to plant and other uncertainties entailed by war conditions. Alderman Pirie, who has been associated with the company from its formation, and Councillor Gibson were re-elected directors.

Vulcanite, Limited.—The report for the year ended October 31 last states that the net profit, after providing for excess profits duty, amounted to £12,958, and the amount brought forward from last year was £2,131. A dividend is recommended on the ordinary shares at the rate of 10 per cent., less income-tax, and a bonus of 6d. per share free of tax. A sum of £1,432 is written off patents, £2,292 transferred to depreciation, and £3,252 carried forward.

Glasgow Tramway Costs.—The general manager of Glasgow Corporation Tramways, Mr. James Dalrymple, has called the attention of the Tramways Committee to the financial position of the department which has resulted from the large increase in wages. The traffic receipts for the first six months of the present financial year show an increase of £80,472 in comparison with the corresponding period of last year, but there has been a great rise in expenditure, due principally to higher wages.

Galway Tramways Company's Petition.—The Irish Master of the Rolls has reserved judgment on the petition by Galway and Salthill Tramways Company asking for a winding up order. The capital is £35,000, in £10 shares, and the amount paid up £15,990. The tramway runs from Galway out to the suburb of Salthill, about two miles distant, and is one of the few horse lines in Ireland. It was constructed 39 years ago, and the rails have ever since been in use. The assets consist of the rolling stock, nine horses, and the usual accessories. The debts amount to £359. The company, by reason of want of capital, was unable to carry on business, and no further capital could be obtained. If the assets were now realised, the directors said, they would be more than sufficient to pay all liabilities. The petition was opposed by Mr. P. J. McCarthy, secretary and manager, and a number of shareholders, who asserted that there was no reason for winding up, and that no notice had been given of a meeting to pass a winding up resolution.

Provincial Tramways Company, Limited.—Mr. Andrew Beattie (chairman) presided at the meeting of the Provincial Tramways Company in London. It is said that the net revenue for the past year was not so high as in the previous year, although the traffic receipts were up by £951 as compared with 1916. It was, in fact, the best year in the history of the company so far as traffic was concerned. Maintenance of rolling stock showed an increase of £744, coal and oil an increase of £1,646, and wages an increase of £1,691. In 1915 the excess profits duty absorbed £5,275, and in 1916 it amounted to £13,641. So the total increased expenditure for the year was £25,222. The reserve fund stood at £102,000, of which £40,000 had been invested in Government securities. The report was adopted, and it was agreed that a dividend be paid upon the £1 ordinary shares of 10d. per share, and a bonus of 6d., equal to 1s. 4d. per share, making, with 8d. per share paid in June, 2s. per share. Mr. Samuel Hern, who was re-elected a director, has been associated with the company for 30 years.

Glasgow Tramway Finance and Increased Wages.—Mr. Irwin, in moving the adoption at a meeting of Glasgow Corporation of minutes of a special committee on conditions of service, made a general statement, in the course of which he referred to the tramway department. He said that the tramway manager anticipated that the cost to that department of the 12½ per cent. bonus granted by the Minister of Munitions and the 5s. awarded by the Committee on Production, would be something like £100,000. Some regard must be had in the near future to the trend of events. Treasurer Barrie said that the Corporation were hopeful that as time went on they would be able to repay the £2,000,000 which they had invested in war loan from the surpluses on the tramway working. If the bonuses and increases were to be added on to the tramways department, there would be no surplus. In fact, if the figures turned out as some people thought there would be a deficiency. Where the money to pay off the money borrowed for the £2,000,000 war loan was to come from would have to be seriously considered shortly.

Newport Corporation Tramways.—The annual report shows that the traffic receipts were £50,010, compared with £44,201 10s. in the previous year. There was an increase in the number of passengers of 1,439,015. At the end of the year there was a credit balance of £8,610 10s. carried to renewals fund account. On the electric supply account there was a deficiency of £273 13s., compared with £993. Councilor Robjent, in speaking on the accounts at the Corporation's December meeting, suggested that in future the accounts should be circulated for a longer period before the meeting at which they were presented. There were one or two matters he should like discussed, but he was chary of discussing any matter upon insufficient information. He would only say that there seemed to be an enormous sum for capital expenditure. It seemed to him, although they had larger gross revenue every year, the expenditure had risen in undue proportion. Councillor J. Moxon explained that owing to the shortness of staff they had been unable to get out the accounts earlier. He asked them to look at the business in the light of a commercial undertaking. The capital written down was £171,000, and the gross profit on the electricity undertaking this year was £22,000. He did not think that was altogether a bad result. He referred to the increased cost of coal, labour, and materials generally. Of the profit of £22,000, £13,000 was absorbed by sinking fund, and £9,310 in interest. Councillor Colborne mentioned that large sums had to be written off every year for depr3ciation. He was pleased to see a cash balance, and that a portion had been put aside for renewals. Councillor Moxon said that £8,000 had been spent on maintenance, and a sum had been carried forward for renewal work.

CONTRACTS AND ORDERS.

Brown Bayley's Steel Works, Limited, have an order from Glasgow Tramways Committee for 500 steel tires.

The Carron Company have an order from Glasgow Tramways Committee for chilled iron brake blocks.

Walsall Corporation Gas Department intend to purchase a motor vehicle at an estimated cost not exceeding £200.

Lancaster Town Council have ordered two motor omnibus bodies from Mr. James Hardy, of Lancaster, at £245 each.

Bolton Electricity Committee have accepted the tender of Messrs. G. and J. Weir, Limited, for a steam turbine feed pump.

Alley and MacLellan, Limited, have an order from Stoke-on-Trent Board of Guardians for a 5-ton Sentinel steam wagon at £960.

Keighley Council have ordered an induced draught fan at a cost of £1,500, in order to increase the capacity of the boiler-house plant at the electricity works.

Barrow-in-Furness Town Council have authorised the electrical engineer to seek Government permission to obtain tenders for an additional turbo-alternator.

Ilford Urban District Council have ordered 1,000 tons of nut slack coal for the electricity works from Messrs. Blackman and Company, at £1 1s. 11d. per ton.

Swansea Electricity Committee have recommended the acceptance of the tender of the British Thomson-Houston Company for plant required at the generating station at £25,516.

Derby Town Council have accepted tenders from Babcock and Wilcox, Limited, for a boiler, at £4,500; C. A. Parsons and Company, Limited, for a 4,000 KW. turbo-alternator at £24,000; and Holmes Brothers, Limited, for tramcar wheel tires.

Walsall Orders Daimler Omnibuses.—Walsall Tramways Committee have authorised the manager to ask the Daimler Company to put the Corporation on its waiting list for the supply of six motor omnibuses at the close of the war, the price being subject to acceptance by the committee at a later date.

Sheffield Electricity Committee have accepted a tender from A. Reyrolle and Company for thirty panels of E.H.T. sub-station switchgear; from Foster Brothers for pipe work for ash plant; from E. Bennis and Company for suction ash plant; and from R. White and Sons for lifts and rails for emergency power-house.

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TRAMWAY CHAIRMEN FOR 1917-18.

Municipal Tramways Committees have now been constituted for the ensuing year, and we append a complete list of the chairmen and the vice-chairmen. In all but a very few cases those who held office last year have been re-elected. New appointments are indicated in the list by an asterisk.

Town.	Chairman.	Vice-chairman.
Aberdare	Coun. E. Stonelake ...	
Aberdeen	Coun. Robertson ...	
Ashton-under-Lyne	Ald. Oldham	Ald. Waterhouse.
Ayr	Coun. J. R. Learmont	Coun. T. Murray.
Bacup	Ald. Sir J. H. Maden	Coun. J. H. Lord, J.P.
Barking	Coun. D. Gordon ...	
Batley	Coun. F. W. H. Auty	Coun. J. E. Oldroyd.
Belfast	Ald. J. Tyrrell, J.P. ...	Coun. J. C. White.
Bexley	Coun. J. Sheldon ...	
Birkenhead ...	Coun. Halsall	Coun. Frame.
Birmingham ...	Coun. H. Barrow ...	
Blackburn	Ald. W. Thompson ...	Coun. C. Higham.
Blackpool	Coun. R. Holt, J.P. ...	Coun. H. Brooks.
Bolton	Coun. P. Higson ...	Coun. Horrocks.
Bootle...	Ald. Booth	Coun. E. Pennington.
Bournemouth ...	Coun. F. J. Bell... ...	Coun. W. J. McCabe.
Bradford	Ald. Priestley	Coun. Akeroyd.
Brighton	*Coun. T. J. Braybon	
Burnley	Coun. E. Heap	Coun. Irving
Burton-on-Trent	Ald. Rowland, J.P. ... (Deputy Mayor)	*Ald. Lowe, J.P.
Bury	Ald. Collinge	Coun. Hargreaves.
Cardiff	Ald. Sir J. W. Courtis, J.P.	Coun. A. J. A. Stone.
Chester	Ald. J. Jones	Coun. A. S. Dutton.
Chesterfield ...	Ald. Shentall (Mayor)	Coun. Woodhead.
Colchester	Coun. A. M. Jarmin ... (Mayor)	*Coun. Wright.
Colne	Coun. R. Knight (Deputy Mayor) ...	Ald. Carr (Mayor).
Coventry	*Coun. H. W. Wale ...	*Coun. J. Grant.
Croydon	*Coun. A. A. Thomson	*Ald. G. J. Allen.
Darlington ...	Ald. Sir C. W. Starmer, J.P.	
Dartford	Coun. R. Bennett, J.P.	*Coun. W. J. Bourne.
Darwen	Coun. G. Pickup ...	Coun. Butterworth.
Derby	Coun. Dean, J.P. ...	
Doncaster	Coun. Balmforth, J.P.	Coun. Marshall.
Dover	Coun. Barwick	Coun. Norman.
Dundee	Bailie Buist	
East Ham	Ald. Murrell Oakes, J.P.	
Eccles	Coun. Alexander ...	Ald. Pearson.
Erith	Coun. G. C. Humphreys	
Exeter	Ald. Varwell	Coun. Towill.
Farnworth ...	Coun. S. C. Steele ...	Coun. Stanley.
Glasgow	Coun. M. W. Montgomery	Coun. T. Kelly.
Gloucester	Coun. J. O. Roberts ...	Coun. C. J. Ramstedt
Great Yarmouth	Coun. J. T. C. Salmon	
Halifax	Ald. C. F. Spencer ...	Ald. A. Fawcett.
Haslingden ...	Coun. Waddington ...	Coun. Haworth.
Heywood	Ald. J. Ashworth ...	Ald. Popple.
Huddersfield ...	Coun. E. H. Sellers ...	Coun. T. Canby.
Hull	Coun. W. Hakes ...	Coun. C. Raine.
Ilford	Coun. O. Waters ...	Coun. J. Lowe.
Ipswich	Coun. E. C. Ransome	Coun. W. Reavell.
Keighley	Coun. A. Smith	
Kilmarnock ...	*Coun. McMenan ...	
Kirkcaldy	Coun. Fergusson ...	
Lancaster	Coun. T. Wilkinson ...	
Leeds	Ald. R. A. Smithson ...	Ald. H. Brown.
Leicester	Ald. Flint	Ald. Banton
Leith	*Bailie Goalen	
Leyton	Coun. F. M. Read ...	
Lincoln	Ald. W. S. White ...	
Liverpool	Ald. E. Russell Taylor, J.P.	Ald. F. Smith, J.P.
Lowestoft	Coun. Spashett (Mayor)	
Maidstone	Ald. Lyle	Coun. Green.
Manchester ...	Ald. J. Bowes	Ald. A. W. Chapman.
Middlesex C.C. ...	County Ald. H. Burt...	County Coun. F. Goodyear.
Nelson	Coun. Cooke	
Newcastle on-Tyne	Coun. R. Mayne, J.P.	Coun. A. M. Sutherland, J.P.
Newport	Coun. J. Moxon ...	Ald. F. Phillips.
Northampton ...	Coun. T. D. Lewis ...	Coun. W. Beale.
Nottingham ...	Coun. R. H. Swain ...	Ald. Radford.
Oldham	Coun. J. K. Cheetham	Coun. Stanbury.
Plymouth	Ald. S. H. Phillips, J.P.	Coun. J. Moon.
Pontypridd ...	Coun. M. L. Jones ...	
Portsmouth ...	Coun. J. Timpson ...	Ald. R. Payne.
Preston	Ald. Ormrod	Coun. Parkinson.
Radcliffe	*Coun. Lund	
Rawtenstall ...	Ald. H. Coupe, J.P. ...	Coun. J. W. Stansfield.
Reading	Ald. Field	
Rochdale	Ald. Taylor	
Rotherham ...	Ald. Winter	Coun. Reeves.
St. Helens	Coun. G. P. Varley ...	Coun. W. N. Pilkington.
Salford	Ald. Linsley	Coun. Barrett, J.P.
Sheffield	Ald. Sir W. E. Clegg, J.P.	Ald. W. C. Fenton, J.P.
Shipley	Coun. H. Pitts	
Southampton ...	Ald. Dunsford, J.P. ...	
Southport	Coun. Clayton	Coun. Richardson.
South Shields ...	Ald. W. G. Wylie ...	Coun. J. G. Winskell.
Stalybridge ...	Ald. R. Wood	Coun. S. C. Homer.
Sunderland ...	Ald. G. New, J.P. ...	
Swindon	*Coun. Stevens	*Coun. Horder.
Wallasey	Coun. F. E. Howse ...	Coun. H. W. Griffiths.
Walsall	Ald. Cope	Ald. Williams.
Walthamstow ...	Coun. W. R. Clarke	
Warrington ...	Coun. Dr. Joseph ...	Ald. Wilkinson.
West Bromwich	Ald. A. G. Turley, J.P.	Coun. G. Garrett.
West Ham ...	Coun. Kensett	
West Hartlepool	Ald. Martin	Coun. Charlton.
Wigan	Ald. R. T. Fletcher ...	Coun. J. Walkden.
Wolverhampton	Ald. Sir C. T. Mander	
York	Ald. S. W. Meyer ...	Coun. W. H. Sessions.

PERSONAL.

Mr. T. J. Bennett, C.I.E., has been appointed a director of the Bombay, Baroda, and Central India Railway.

Mr. J. C. Williams, electrical engineer and tramways manager of Erith, has been voted an increase in salary.

Mr. J. P. Tierney, of Dublin, has been retained by Cork Corporation to report on the city electric lighting plant.

Mr. W. J. Cox has been appointed works manager at the Derby Corporation electricity works, at a salary of £240 per annum.

Mr. H. S. Ellis, electrical engineer of South Shields Corporation power station, has been granted an increase of £50 in salary.

Sergeant T. Barclay, who has been awarded the Military Medal, was formerly in the service of the Glasgow Corporation Tramways.

Sir John Wolfe Barry, owing to advancing age, has decided to relinquish his position as chairman of the Eastern and Associated Telegraph Company.

Captain B. F. B. Hargreaves, who has been officially reported as missing, was chief accountant of the Blackpool and Fleetwood Tramroad Company.

Mr. W. Greenwood has been appointed temporary third engineer in charge of the Ilford Council's station, at a salary of £150 per annum and war bonus.

Mr. J. B. Hudson, deputy electrical engineer of Bootle, has been appointed electrical engineer to Leigh Corporation. There were 111 applicants for the position.

Mr. W. S. Vignoles, borough electrical engineer, of Grimsby, has been gazetted Lieutenant-Colonel. Mr. Vignoles offered his services at the outbreak of war, and went to France in 1916.

Mr. F. R. Hobley, mains engineer at Lowestoft Corporation electricity works, has been appointed electrical engineer to the New Van Mining Company, of Llanidloes, South Wales.

Mr. William H. Woods has been appointed as from November 21, 1917, a charge shift engineer at Greenwich generating station at a commencing salary of £250 a year, rising by annual increments of £10 to £300.

Messrs. A. & F. Manuelle, Limited, have removed to 4 and 6, Throgmorton Avenue, London, E.C.2. Their telephone number remains as hitherto, London Wall 8836, and their telegraphic address will be "Feldspar, Ave., London."

Mr. A. T. Smith, borough electrical engineer of Leigh Corporation, has been presented with a gold wristlet watch as a token of respect and appreciation by the staff of the electricity works on his appointment to the British Dyes Company, of Huddersfield.

Mr. G. P. Malling, who recently resigned the position of chief inspector of the Rawtenstall tramways to take up a post on the Blackpool tramways, has been presented with a gold watch by the Rawtenstall tramway employees. The presentation was made by Mr. C. L. E. Stewart, the manager.

Mr. J. W. Falkingham, of the Bradford Corporation Tramways, has taken up a position with Messrs. Clayton and Shuttleworth, engineers, of Lincoln. Mr. Falkingham is well-known to the members of the Municipal Tramways Association, with which body he has been closely associated for a number of years.

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Mr. D. Robertson, stores clerk of Lanarkshire Tramways Company, has been presented with a pocket-book and £15 by the staff and employees on his departure to join the colours. Mr. G. F. Moller, general manager, made the presentation at a social evening following a tea to which Mr. Robertson entertained the company.

Mr. F. Dudley Docker, C.B., chairman of the Metropolitan Carriage, Wagon and Finance Company, Limited, has joined the directorate of the British Westinghouse Electric and Manufacturing Company, Limited, as a consequence of the purchase by the former company of the American-held shares of the British Westinghouse Company.

Mr. F. J. S. Hosken, general manager and engineer of Darwen Corporation Tramways, has been granted permission to acept an appointment as assistant dilutions officer under the Ministry of Munitions at Manchester. Mr. Hosken will retain his position as manager of the tramways department, but will devote a portion of his time to his new duties.

Motorman A. A. Allen, of the West Ham Corporation Tramways, has been granted the Military Cross for conspicuous service on October 4, when, after all other officers of his company were put out of action, he took charge and held the position for forty-eight hours. He was appointed to the rank of second Lieutenant in the 13th Royal Fusiliers in June last.

As a mark of appreciation of their services, silver rose bowls were presented to **Mr. Arthur Brown,** city engineer, of Nottingham, and **Mr. H. Talbot,** city electrical engineer, by Mr. R. H. Swain, chairman of the Tramways Committee, on behalf of Sir John Turney, a former chairman of the committee. Mr. Brown has occupied the position of city engineer for 37 years and Mr. Talbot has rendered 25 years' service.

R. W. Blackwell and Company, Limited, owing to their offices having been requisitioned by the Government, have removed to 36, Emperor's Gate, South Kensington, London, S.W.7. (Telegrams, "Kurkee, Southkens, London." Telephone, Western 4362, 4363, and 4364). Their new premises are just off the Cromwell Road, two minutes' walk from the Gloucester Road Station of the Underground Railway.

Mr. George Sutton, managing director of W. T. Henley's Telegraph Works Company, Limited, who has been connected with the company for upwards of thirty-six years, has been elected chairman as from January 1, 1918, Mr. Sydney Gedge, owing to advancing age, having decided to relinquish that position. Mr. Gedge has been a director of the company for thirty-seven years, and chairman for thirty years, and he will continue a member of the board.

Mr. E. J. Jennings.—At a meeting of the City of Birmingham Electric Supply Committee it was decided to recommend to the Council that Mr. E. J. Jennings, the secretary and accountant of the Marylebone Lighting Committee, be appointed secretary. The two other candidates, selected from over 600 applicants, were Messrs. H. P. Conibear, of the South Lancashire Tramways Company, and W. M. Wright, of the London Underground and suburban group of companies.

Mr. E. E. Redhead, of the general manager's office of Wallasey Corporation Tramways, having accepted a more remunerative position in a commercial house in Liverpool, was, on November 30, presented with a gold albert by the general manager, the members of the office staff, and other officials. Colonel Greene spoke in high praise of Mr. Redhead's services, expressing regret at his departure, and best wishes for a successful career. The gift was a slight memento of Mr. Redhead's fifteen and a half year's service.

The Staff of Cape Electric Tramways.—Reference was made by the chairman of the company, at the annual meeting, to the difficulty created by the ever-recurring changes among the employees. All the new hands required to be trained, and great credit was due to Mr. W. F. Long, their able general manager, and the staff in Cape Town for the efficient manner in which the service had been conducted. The Port Elizabeth Tramways, under Mr. W. H. Freemantle's able management, did not suffer so much from these disabilities, and had run quite smoothly throughout.

Sir Arthur Stanley has intimated to the Ormskirk Divisional Conservative Council that he does not intend to seek re-election at the general election. In his letter he said that new problems of great magnitude were arising which must be dealt with by Parliament in the near future, and such an important division should have a more active and efficient representative. In view of the invaluable and untiring services which Sir Arthur Stanley has given since the beginning of the war as head of the Red Cross organisation, the suggestion that Ormskirk Division might find a more active or efficient representative is a counsel of perfection which is not likely to be realised.

Inspector J. F. McGovern, of Colchester Corporation Tramways, and Regimental-Sergeant-Major of the Essex Yeomanry, has been appointed Lieutenant and Quartermaster of the 18th (Queen Mary's Own) Hussars, and has proceeded overseas to join that regiment. Prior to being R.S.M., Lieut. McGovern was Regimental-Quartermaster-Sergeant of the Essex Yeomanry. Soon after the outbreak of the war he re-enlisted, and has gained the highest praise from his superiors. Recently he received special mention from the G.O.C. 1st Mounted Division. During the South African War Lieut. McGovern served as Staff-Sergeant in the City Impriale Volunteers, and was mentioned for his services.

Mr. J. D. S. Moffet, general manager, Belfast Corporation Tramways, and **Mr. McCormick,** the city solicitor, were warmly commended by Alderman Tyrrell, chairman of the Tramways Committee, in reference to the recent arbitration by the Committee of Production. Alderman Tyrrell said that the inquiry arose out of the action of the Electrical Trades Union in connection with the transfer of overhead equipment maintenance to the tramways department. The principle was whether the Corporation had the right to direct their own policy, and institute a scheme of retrenchment and efficiency, or whether an outside body had the right to veto that policy. Having regard to the importance of the principle that the Committee on Production had now definitely settled, the city solicitor was entitled to the thanks of the Corporation, and the same ought to be said of Mr. Moffet, because it was on his sound advice that the matter had its inception. Mr. Moffet's attitude had been vindicated up to the hilt, and the expectations which the Corporation had formed of his ability and judgment had been amply fulfilled. As the result of the new system, Mr. Moffet was maintaining the overhead equipment by a staff of about half the number formerly employed, and was saving between £20 and £30 per week.

Personnel of Fraser and Chalmers, Limited.—Addressing the annual meeting, Mr. A. H. Wilson Tait, the chairman of the company, said he mentioned at a previous meeting that the directors had established an office at Petrograd, and Mr. Catlin, their manager in Russia, had been building up connections for future trade, and had secured several orders for turbines and other articles. Owing to the upheaval in that country, they considered it prudent to ask Mr. Catlin to return and confer with the directors, and as a result they felt that until the political and economic atmosphere cleared there was little prospect of active development. Meantime, Mr. Catlin had undertaken a visit to the United States, so that the board might be made familiar with the developments there, and it would no doubt strengthen their connections when they were able to recommence activities in Russia. The chairman also made special reference to the work of Mr. McDermott, the managing director, Mr. Rogers, the general manager, and the whole of the staff. Mr. Vere H. Smith congratulated the directors on the year's work, and noted with satisfaction that the company was specialising in certain forms of manufacture.

Alan Tegetmeier, London Regiment, who was killed on December 8, aged 26, was the younger son of Mr. and Mrs. G. Tegetmeier, of Purley. He was educated at Dulwich College, where he gained in succession junior and senior scholarships, and matriculated at London University in 1907. He joined the staff of the British Electrical Federation, Limited, in 1913, and at the outbreak of war enlisted. He chose to remain in the ranks, and served in France and Salonika. Early in 1917 his regiment was moved to another front.

Our readers will learn with regret that **Mr. Richard Thomas Kingham** died at Eastbourne in December. Mr. Kingham joined the London General Omnibus Company in 1855, and was secretary for thirty years until 1908, when the amalgamation took place with the London Road Car Company and the Vanguard Motor Omnibus Company. Mr. Kingham was in charge of the advertising department of the London General Omnibus Company for several years prior to his retirement in 1912, and was very well known to advertising men. In his earlier days Mr. Kingham was a prominent Freemason.

Lieut. J. V. Knox, R.F.C., and London Regiment, who was accidentally killed in this country on January 4, was the eldest son of Mr. Vesey Knox, K.C. He was educated at Wixenford, Wokingham, and Rugby. After a short period of service in the Northamptonshire Regiment, which he entered from the Royal Military College, he became a clerk in the Principal Probate Registry. He joined a battalion of the London Regiment on August 4, 1914, and served in France from February, 1915, to July, 1916, when he was attached to the Flying Corps. He broke his jaw in an accident while training in the autumn of 1916, but had recovered, and recently qualified as a pilot.

Mr. Ewing Matheson, who has died at Dartmouth at the age of 78, was chairman of Leeds Electricity Committee from 1905 to 1908. Upon the amalgamation with the Tramways Committee, he became vice-chairman, under Alderman R. A. Smithson, until 1910. Mr. Matheson was a leading civil engineer, and while acting as a director of Messrs. Handyside and Company, of Derby, he had charge of the erection of the railway stations at St. Pancras (London), St. Enoch's (Glasgow), and Manchester Central Station, the roofs of the Agricultural Hall and Olympia, and a large number of road and railway bridges in England, Europe, and the Colonies. Subsequently he became principal of the firm of Messrs. Matheson and Grant, London, consulting engineers, and in 1887 he accepted the managing directorship of the Farnley Iron Company. He was the author of numerous engineering publications.

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TRAMWAY AND LIGHT RAILWAY NOTES.

BELFAST.

CONDUCTOR AWARDED DAMAGES.

A Belfast conductor has been awarded £25 damages against a passenger who complained to an inspector that he was drunk and incapable of performing his duties. Plaintiff had asked the defendant for the fare when he was going up the stairs of a car, defendant replying that he could go upstairs and get it.

BIRKENHEAD.

ILLEGAL STOPPING OF A CAR.

A passenger was recently summoned for interfering with a trolley pole on one of the Birkenhead Corporation cars. He said in defence that he asked the conductress to stop. As she did not do so, he pulled the trolley from the wire, thus stopping the car, and got out. The defendant had apologised, and the case was dismissed on payment of costs.

BIRMINGHAM.

MISCHIEVOUS BOYS.

At Birmingham four boys were fined 10s. each for stealing electric bulbs from the dashlights of tramcars on the Pershore Road route. A boy of 12 was sent to an industrial school till he reached the age of 16 for stealing a packet of coppers from the conductor's box on a Lodge Road car.

BURNLEY.

TRACK DEPRECIATION.

At a meeting of the Burnley Council recently, Councillor Grey said that the wearing away of the tramway rails was a very serious matter, for which no provision was being made. This would some day confront them with a problem of the greatest financial difficulty, and he did not think that due consideration had been given to the matter.

CROYDON.

BOYS' DANGEROUS PRANKS.

At Croydon Police Court on December 6, two boys were summoned for jumping on the backs of tramcars. Mr. A. V. Mason, general manager of the South Metropolitan Electric Tramways Company, said that they had been much troubled with such boys, who jumped on the cars, rang the bell, and gave the emergency signal, as a result of which the drivers applied the emergency brake, and brought the car up so suddenly as to shake up the passengers. The boys also stole boxes in which the conductors kept their coppers. Each boy was fined 5s.

DUMBARTON.

A RESULT OF CARELESS DRIVING.

In Dumbarton Sheriff Court, Sheriff Macdiarmid has given his decision in an action by the Anglo-Swedish Electric Welding Company, Glasgow, against the Dumbarton Burgh and County Tramways Company. It appeared that a motor lorry belonging to the pursuers was going along a road in which the tramway was laid, when the engine went wrong and the lorry came to a standstill in such a position that part of it projected over the tramway line. While men were engaged repairing the engine, a tramcar ran into the lorry and both vehicles were damaged. The pursuers claimed £302. The Sheriff found that the collision was due to the fault of the driver of the tramcar, and assessed the damages due to the pursuers at £266.

GLASGOW.

CONTRIBUTORY NEGLIGENCE.

An interesting decision has been given by Sheriff Fife, Glasgow, in an action by James McGuigan against Glasgow Corporation for damages in respect of personal injuries. The pursuer's case was that while coming down the stairs of a tramway car, the driver drew up with such violence that several passengers also coming downstairs were knocked against him, and he was thrown on to the street, sustaining a fracture of the right arm. The Sheriff, in dismissing the action, said that the proximate cause of pursuer sustaining injury was, according to his own statement, that on his way down the stair he was thrown off the car by other passengers jostling him. This could not have happened if pursuer had been holding on to the stair rail or the upright stanchion. A passenger who came down a car stair without taking a grip of something obviously confessed himself guilty of contributory negligence. A car might stop suddenly or stop with a jerk at any moment for a great many good reasons, and this was a possibility which car passengers had to reckon with at all times.

HALIFAX.

RAILLESS CARS.

Sanction was given at the last Town Council meeting to the purchase of two railless cars from Dundee Corporation at a price of £650 each. Alderman Brooksbank protested that they had no information as to the cost of the equipment, or as to the damage done by railless cars to the highways. In Halifax the cost of road maintenance was £140 per mile per annum. Where these cars had been used in Dundee he understood that the cost had amounted to £600. Alderman Spencer said that the cars would keep heavy loads off the roads. No special overhead wires would be adopted for the equipment. The cars would be able to carry loads of five tons at a cost of from 9d. to 11d., representing a cost of about 2¼d. per ton per mile. Petrol driven vehicles would represent a cost of about three times that amount. He believed that the railless cars, apart from saving the roads, would be one of the most important means of carrying goods in the future. In the national interest something must be done to relieve the roads of carrying heavy loads and for carrying goods more economically. After the war there would have to be general legislation dealing with goods carriage. What the Tramways Committee wished to do was to assist the Government in taking heavy materials off the roads.

HULL.

ROAD IMPROVEMENTS—WOMEN DRIVERS.

The Corporation City Improvements Committee have conferred with the East Riding County Council as to the proposals for the widening of Hedon Road to a width of 70 ft. from the city boundary to the Preston Road. The length affected is about 2,685 yards, and the improvement will require the purchase of about ten acres, the cost of the land being estimated at £2,500. As approximately two-fifths of the land required to widen the road will be utilised for tramway purposes, it is proposed that the Tramways Committee should contribute £1,000 to the cost of the widening. The County Council has agreed to contribute £1,000. The Tramways Committee have resolved that in view of the great difficulty of finding suitable men as drivers, women should be employed for the period of the war as and when vacancies occur.

LEEDS.

TRAFFIC REGULATION—PECULIAR COLLISION.

Leeds police have issued the following notice as to street traffic :—The attention of the general public, and particularly all drivers of vehicles, is called to the inauguration of a new method of directing traffic at several busy traffic points in Leeds during the hours of darkness. Special constables stationed to direct traffic at several of the traffic points are now supplied with an electric apparatus displaying three lights, viz., a red light is carried on the constable's back, between the shoulders. This light is continually visible to traffic approaching from the rear of the constable, and indicates that the road is not clear. Two lights (one red and one white) are also carried in the hands of the constable. If the hand containing the white light is waved, it indicates that the road is clear for approaching traffic to proceed. If the hand containing the red light is waved, it indicates that the road is not clear, and drivers of approaching vehicles must not attempt to pass until the white light is displayed. At Leeds, on December 14, a trackless car, which was standing at the top of Aire Street with lights extinguished while the trolley was being changed over, was run into by a tramcar leaving City Square. The attention of the driver of the tramcar being called to the rear of his car by the ringing of the conductor's bell, he did not notice the darkened vehicle in front until the collision occurred. Both cars were damaged, and the driver of the tramcar was slightly injured.

LONDON.

STATE OF UNITED TRAMWAYS—OPPOSITION TO A LONDON COUNTY COUNCIL IMPROVEMENT.

Mr. James Devonshire, managing director of the company, in a statement with reference to the Bill now being promoted by the company, recently made to the Uxbridge Urban Council, alluded to the bad state of the track, and said that their effort to obtain rails both in England and America had been unsuccessful. It was necessary that they should increase fares, and they proposed to ask a penny a mile and a halfpenny for workmen, with a minimum of a penny. They desired also an extension of the period of purchase by the local authorities until 1960. The company were now paying wayleaves amounting to about £4,000 a year, and in their Parliamentary Bill they were seeking to be relieved of this payment. Mr. Devonshire said that the Uxbridge line had never paid, and they wished to abandon certain portions. They did not intend any of the concessions asked for to come into operation until after the war. The tramways would be put in order as soon as money and materials could be procured, and they hoped to obtain assistance from the Board of Trade in this respect. Westminster City Council has been recommended by the Works Committee to refuse consent to the proposed construction of a loop line at the tramway terminus at Vauxhall Bridge Road. The London County Council desire to construct a single line of new tramway by way of Gillingham Street and Wilton Road, in order to do away with the dead end near Victoria Station, and thus to relieve the present congestion of traffic there. It is urged by the committee that the extremely congested and already very dangerous condition of the length of roadway between Victoria Street and the entrance to Victoria Station is such that the construction of such a tramway could not be viewed without the very strongest objections being raised. At a meeting of the London County Council, Mr. G. H. Hume, chairman of the Highways Committee, said that owing to the objection of the Commissioner of Police it was not considered desirable to proceed with the scheme.

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NEWPORT.

LIGHT RAILWAY EXTENSION.

Lieutenant-Colonel Druitt, R.E., has, on behalf of the Board of Trade, inspected a new light railway at Newport (Mon.), which runs from Pill Gates to the entrance to Alexandra Dock. The line is an extension of the Corporation's tramway system.

PLYMOUTH.

SUCCESS OF PENNY FARES.

The report of the general manager of Plymouth Corporation Tramways, presented at the last meeting of the Council, on the working of the tramways for the four weeks ended December 8, showed for the first time a comparison with the record for a period of 1916 in which the system of universal penny fares was in operation, as the new scheme came into force on November 9 last year. During the four weeks covered by the manager's last report, the passengers totalled 1,931,679, and the traffic receipts amounted to £8,035 12s. 2d. Those figures compared with 1,591,881 and £6,610 9s. 1½d. respectively in the 1916 return, and showed the remarkable increase for the four weeks of 339,793 passengers and £1,425 3s. 0½d. receipts.

POSTMASTER'S ACTION AGAINST BLACKPOOL AND FLEETWOOD TRAMROAD COMPANY.

LEAKAGE OF ELECTRIC CURRENT.

At Blackpool County Court, on November 8, H.M. Postmaster-General claimed £16 1s. 8d. from the Blackpool and Fleetwood Tramroad Company, Limited. Mr. Ross Brown (instructed by Messrs. Cotman and Son) appeared for the Postmaster-General, and Mr. Wingate Saul (instructed by Mr. J. R. Gaulter) represented the defendant company.

Mr. Ross Brown said though the action was brought for the recovery of a small sum, its importance arose from the question of liability, which both parties desired to be settled. The amount of the claim was for the cost of making good damage to the telegraph and telephone cables alleged to have been caused by leakage from the tramroad. The claim was brought under a protecting section of the Act of the defendants, and alternately under the Telegraph Act of 1878. The current was generated at Bispham, and the Post Office cable ran almost parallel to the tramroad, but owing to imperfect bonding of the tramroad there was a leakage of current, which pitted the lead sheath, and in the course of time the cable was destroyed by electrolysis, and had to be replaced at the cost of the claimant. Counsel said he understood that the case for the defendants was that as the tramroad was there before the Post Office cable was laid they were not liable.

After evidence had been given as to the escape of electricity and the damage done, Mr. Wingate Saul, addressing the Judge, said that the Tramroad Company were constituted as a railway company, and unless they were guilty of negligence they were not liable. If they were carrying on the tramway in a proper manner, and in accordance with the Board of Trade regulations, they were not liable for any damage which might happen from an escape of electricity.

Counsel quoted from the company's Act regarding telegraph and telephone lines, and said it referred to the lines in existence when the tramroad was made, and not to any lines which might ultimately be put down. He urged that the company had not done anything to damage the cable, because it was laid after the tramroad was constructed.

His Honour, Judge H. Sturges, K.C., subsequently gave judgment in favour of the Tramroad Company with leave to the complainant to appeal.

Cape Electric Tramways.—Mr. L. Breitmeyer presided at the twenty-first ordinary meeting held on December 5, and moved the adoption of the report. From November last year, he said, the traffic receipts made up for the decrease experienced in the first four months of the financial year, and also enabled a considerable improvement to be shown. The number of passengers on Cape Town and Port Elizabeth systems was the highest on record, and reached 23,752,016 passengers, with a gross revenue of £231,105, or an increase of 1,274,650 passengers, and in receipts an increase of £18,314 over the preceding year. The working expenditure of £140,773 was also a record, and was greatly in excess of normal times, owing to the greatly increased cost of material, higher labour charges, war bonuses, etc., and lastly, the additional taxation imposed by the Union Government. The profits transferred, however, showed an improvement of £6,225. This result had been obtained under difficult conditions. In Cape Town, owing to an unusually dry season, a water famine was experienced, which necessitated the undue use of salt water for road watering, to the detriment of the rails. Fortunately the storage capacity of their own tanks was sufficient to supply the water necessary for the boilers. There was a profit of £79,893, and after charging debenture interest and amortisation a net profit was shown of £31,169; this, added to £7,983 brought forward, gave an available amount for appropriation of £39,152; £12,000 of this sum had been set aside to reserve account, and the directors recommended a dividend at the rate of 5 per cent. on the share capital, which would absorb £24,561, leaving £2,591 to be carried forward. It was most satisfactory that they had been able to increase the dividend. The English excess profits tax amounting to £2,584, for which the company was made liable last year, was paid, and afterwards refunded. If any further shortage occurred in supplies the services might have to be reduced, but otherwise the outlook was satisfactory, thanks to the general prosperity of South Africa.

PATENT LIST.

Abstracted for "The Tramway and Railway World" from the Official Journal of Patents.

***** If the inventions have been communicated the names of the communicators are given below in *italics*.**

APPLICATIONS FOR LETTERS PATENT.

Mechanical lubricators (17,561)—Albion Motor Car Company.
Gas containers for motor vehicles (17,646)—E. J. Atkinson.
Controlling mechanism for mechanically-propelled vehicles (17,519)—H. J. Balcombe, Daimler Company, and T. Dawson.
Tie-bars for rail chairs, etc., and locking tie-bars in position (17,736)—H. Birkbeck (*L. Green*).
Independent concrete block sleepers for railways (17,739)—H. Birkbeck (*L. Green*).
Differential gearing for steering motor vehicles (17,592, 17,780)—G. M. Blackstone, E. and F. Carter, and R. E. Watts.
Jacking apparatus for motor vehicles (17,500, 18,716)—G. Bowman and E. Graham.
Motor lorries (17,605)—G. Calvert.
Fluid pressure braking apparatus (17,743)—J. W. Cloud.
Motor vehicles (17,600)—T. B. Cooper.
Automatic signalling arrangements for electric tramways, etc. (17,773)—D. Hamburg.
Appliances for railway or tramway track (17,696)—S. P. Keates.
Gas container for motor vehicles (17,059)—E. H. Kinnaird.
Trailer vehicles (17,717)—C. McMullen.
Motor vehicles driven by internal combustion engines actuated by coal, etc., gas (17,558)—C. H. Parker.
Seat for tramcars (17,655)—E. Redfern.
Electro-pneumatic braking apparatus (17,426)—W. V. Turner.
Fluid pressure jacking apparatus for motor vehicles (17,924)—G. Bowman and E. Graham.
Automatic train stops (18,103)—M. B. Bulla.
Regulating pressure of coal gas for use in motor vehicle engines (18,214)—C. P. Day.
Lubricating sponge for electric motors and tramcars (18,108)—J. Gregory.
Train control systems (18,221)—A. Kerr.
Motor truck attachments (18,063)—J. W. Shaw.
Electric signalling (17,977)—B. H. Thomson.
Gas containers for motor vehicles (18,167)—H. W. Tomlinson and Tomlinson and Company.
Gas container for motor vehicles (18,001)—S. C. Wheatley.
Rails for tramways (18,699)—J. T. Bower.
Coal gas carburetter, compressor, and container for motor vehicles (18,332)—E. J. Buckingham.
Manufacture of weldless three-link coupling chains for railway vehicles (18,381)—C. C. Champeney and F. W. Marillier.
Solid rubber tires (18,391, 18,444, 18,450)—Dunlop Rubber Company and C. Macbeth.
Differential gear for driving motor vehicles, etc. (18,313)—A. Millichamp.
Jacks (18,681)—R. A. Smith and S. Smith and Sons.
Two-wheeled trailers for road vehicles (18,932)—J. Banks.
Trolley guide for electric trams (19,004)—W. Barratt.
Gas containers for motor vehicles (18,895)—M. Binnes.
Variable speed mechanism for motor vehicles, etc. (18,882)—E. Feuerheerd.
Control mechanism for electric vehicles (18,745)—Industrial Appliances, Limited, and J. G. Robinson.
Controllers for motors of electrically propelled vehicles (18,746)—Industrial Appliances, Limited, and J. G. Robinson.
Collapsible gas-holders for motor vehicles (18,762)—J. C. Jolly and United Automobile Services, Limited.
Motor vehicles (18,818)—R. F. Macfie.
Lifting jacks for vehicles (18,739)—F. L. Rapson.
Condensers or radiators for motor vehicles (19,144)—T. Clarkson.
Automatic train control (19,117)—J. J. Daniels.
Motor vehicles (19,317)—M. C. I. Hunter.
Motor vehicles (19,182)—A. E. Munby, Portland Engineering and Traction Company, and J. Williamson.
Strap-hanging devices for tramcars (19,060)—W. T. Nicholson.
Overhead trollies for electric tramway or railway vehicles (19,050)—W. Rees and C. O. Taylor.
Apparatus for operating railway points by wire (19,237)—J. Servais, Tyer and Company, and E. I. M. Vincent.

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SPECIFICATIONS PUBLISHED.

1916.

Brake mechanism for railway and tramway vehicles (10,910—*110,767*)—J. G. Brill Company and A. F. H. Head.
Fluid pressure brake systems (12,353—*110,771*)—W. V. Turner and W. M. Cady.
Ground levers for railway and like points (13,476—*110,772*)—L. W. Williams and T. A. Gentles.
Steam-heating systems for railway and tramway vehicles (18,352—*110,832*)—C. C. Champeney.
Speed indicators (16,683—*102,611*)—Soc. Aera.
Wheels for motor and other road vehicles (18,615—*110,989*)—E. P. Bouracier and E. Wise.
Gear trains (16,422—*111,158*)—Sir C. A. Parsons, S. S. Cook, and E. B. Chapman.
Railway coach and train propulsion (16,715—*111,170*)—F. W. Lanchester and Daimler Company.
Controlling mechanism for power-driven vehicles (16,991—*111,175*)—E. C. R. Marks (*Mercury Manufacturing Company*).
Couplings for road vehicles (17,487—*111,186*)—H. Ledwige.
Signalling apparatus for use on road vehicles (18,401—*111,192*)—A. H. Kelday.
Double helical gear trains (16,669—*111,329*)—C. A. Parsons.
Checking and registering the number of passengers carried and the amount of fares earned on tramcars and other public conveyances (16,769—*111,336*)—W. S. Laurie.
Steering gear for vehicles (17,513—*111,360*)—E. C. R. Marks (*Mercury Manufacturing Company*).
Control valves for air brakes (17,935—*106,464*)—Knorr-Bremse Akt.-Ges.

1917.

Station and stopping place indicators for use on vehicles (751—*110,843*)—P. Fandel.
Fluid pressure brake systems (8,043—*110,888*)—W. V. Turner.
Self-acting safety brakes for motor cars (9,951—*110,894*)—R. C. Pessell and W. H. T. Beattie.
Attachment for the wheels of self-propelled vehicles (3,436—*111,025*)—E. Burt.
Turntables for tramways (10,763—*108,321*)—Soc. Faure Freres.
Radiators for the internal combustion engines of motor-driven vehicles (1,738—*111,209*)—W. Bonson.
Change-speed mechanism (10,479—*111,263*)—C. G. Pullin.
Variable speed gears (11,503—*111,266*)—S. A. Bagley.
Speed change mechanism (1,462—*111,390*)—A. A. W. Van Reede.
Trolley heads for electric traction (2,026—*111,396*)—W. Pickersgill and J. H. Pitt.
Starting apparatus for motor car engines (6,374—*106,820*)—Akt.-Ges. Brown, Boveri et Cie.
Electro-pneumatic brake system (9,165—*111,439*)—W. V. Turner.
Driving gear for motor vehicles (14,276—*111,458*)—F. H. Mingay.
Automatic signals for railways (3,606—*111,608*)—R. L. Edwards and H. Edwards.
Brake mechanism for automobiles (7,193—*111,634*)—H. Josephson.
Electric signalling devices (9,108—*111,640*)—J. Atherton.

Colonial and Foreign Tramways Traffic Returns.

NAME OF COMPANY.		1916. WEEKS ENDED.					1917. WEEKS ENDED.					AGGREGATE.		
		Dec. 2.	Dec. 9.	Dec. 16.	Dec. 23.	Dec. 30.	Dec. 1.	Dec. 8.	Dec. 15.	Dec. 22.	Dec. 29.	Wks.	1917.	Increase or Decrease.
		£	£	£	£	£	£	£	£	£	£		£	£
Anglo-Argentine		52.450	52.955	53.833	53.083	58.103	54.091	54.898	53.904	54.902	63.998	52	2.720.626	+ 48.221
Calcutta	Rs.	72.116	72.961	72.204	73.168	72.478	71.598	71.342	71.748	70.728	76.984	52	3.557,777	+ 85
Madras		...	(2 weeks)	31.938	(2 weeks)	40,770	...	(2 weeks)	35.112	(2 weeks)	46.646	52	847.320	+ 79.442
Pernambuco		3.500	3.553	3.550	4.200	...	4,591	4.691	4.655	4.769	...	50	119.134	+ 39.884

Companies Issuing Monthly Statements.

		1916.						1917.						Wks.	AGGREGATE.	
		July.	August.	Sept.	October.	Nov.	Dec.	July.	August.	Sept.	October.	Nov.	Dec.		1917.	+ or −.
		£	£		£	£	£	£	£	£	£	£	£		£	
Ballarat & Bendigo ..		2.704	2.791	2.850	3.390	3.430	...	2.593	2.693	2.816	3.560	3.552	...	32	25.665	+ 125
Brazilian Traction Mlrs		7429000	7405000	7138000	7262000	7160000	...	7795000	8064000	7925000	8006000	7695000	...	47	84,131,000	+ 6,558,000
Brisbane		32.880	37,900	32,530	32.760	26.740	...	32.720	36.925	31.600	33.580	32.900	...	47	361,320	+ 4.160
British Columbia	$	411.847	423.738	414.811	445.263	472.767	...	438.378	454.425	457.709	491.964	525.629	...	21	2.368,105	+ 199.679
Buenos Ayres Lacroze		38.439	36.431	37,077	39.670	39.133	40.106	38.063	39.111	33.655	39.067	39.679	40,901	26	230,476	− 419
Burma		26,340	24.413	23.749	29.768	26.824	...	26.288	26,714	26,168	28.955	27,761	...	17	81.837	+ 3.907
Cape Town		...	13.394	...	14.238	...	...	16.067	15.480	...	17.128	16.522	...	—	—	—
Carthagena & Herrerias		2.371	2.081	1.779	2.539	2.252	2.399	5.763	4.164	4.306	2.805	3.932	4.424	52	49.566	+ 19.776
Cordoba		14.258	13.851	13.313	...	...	...	14,343	14.278	12.463	...	...	...	26	82.895	− 1.588
East India		2.220	2.522	2.523	2.080	1.942	2.120	1.183	1,562	1.512	1.229	871	1,099	22	6.273	− 4.914
Kalgoorlie		2.521	...	...	...	...	...	2.713	...	...	...	...	...	30	18.154	+ 696
La Plata		3.910	3.793	3.993	4.434	3.140	4.437	3.875	4.076	3.450	4.069	3.741	4.606	52	48.963	− 1.874
Lima		...	...	33.340	33.303	33.608	...	...	...	35.621	37.537	37,466	...	47	397.198	+ 26,199
Manaos	Rs.	152.380	147.774	141.286	...	...	...	162.157	150.657	157.761	...	...	...	—	—	—
Mexico	$	...	...	...	...	...	...	...	...	...	...	...	...	—	—	—
Monte Video		25.220	26.044	26.711	28.729	28.404	31.364	28.597	28.860	29.426	30.153	31.060	34.025	8	65.085	+ 5.317
Peruvian	$	835.430	895.900	911.910	945.590	925.820	990.842	975.000	979.430	950.740	1047220	1034790	1101090	26	6.088.270	+ 582.778
Port Elizabeth		3.166	2.863	...	3.131	...	...	3.544	3.360	...	3.885	3.807	...	—	—	—
Rangoon		4.357	4.253	4.137	5.043	5.033	4.904	4,783	4.788	5,163	5.667	5.358	5,438	52	60.817	+ 2.509
Toronto	$	867,789	889.241	913.535	907.460	911.829	...	954.192	1039819	1023517	1043886	1052000	...	47	10,986,998	+ 1.161.945
Winnipeg ...	$	242.688	249.795	267,497	278,817	282.899	...	242.797	248.457	267,170	301.722	305.881	...	47	3,039.397	+ 16 227

(*Continued on page 42*)

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TRAFFIC RETURNS—*continued.*

Tramways and Omnibus Undertakings in the United Kingdom.

NAME OF COMPANY OR CORPORATION.	1916. WEEKS ENDED.					1917. WEEKS ENDED.					AGGREGATE.		
	Dec. 2.	Dec. 9.	Dec. 16.	Dec. 23.	Dec. 30.	Dec. 1.	Dec. 8	Dec. 15.	Dec. 22.	Dec. 29.	Wks.	1917.	Increase or Decrease.
	£	£	£	£	£	£	£	£	£	£		£	£
Aberdare U.D. Council	397	393	451	338	464	454	455	451	457	536	38	17.118	+ 1.575
Aberdeen Corporation	1.782	1.882	1.787	1.805	1.902	2.005	2.146	2.022	2.016	2.167	30	64.903	+ 7.253
Accrington Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Ayr Corporation	262	256	249	268	283	340	331	335	333	354	33	16.164	+ 1.867
Bath Electric	*	...	...	...	...	...	...	...	...	...	—	—	—
Belfast City	5.693	5.791	5.735	5.972	6.109	7.083	7.045	7.028	7.311	7.802	39	254.914	+ 31.633
Birkenhead Corporation	1.521	1.445	1.400	1.592	1.348	1.864	1.840	1.835	1.929	1.717	39½	72.119	+ 11.408
Birmingham Corporation	13.637	13.850	13.018	15.709	14.298	19.501	19.356	19.588	19.634	16.798	39	719.719	+ 98.680
Birmingham Corp. Motor Omnibuses	1.022	905	859	868	664	1.179	1.166	1.180	1.148	950	39	41.350	+ 2.484
Blackburn Corporation	1.061	1.030	1.021	1.022	...	1.323	1.308	1.298	1.322	...	38½	57.185	+ 10.000
Blackpool and Fleetwood	...	267	...	...	445	362	...	...	...	716	51½	44.164	+ 1.148
Blackpool Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Bolton Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Bournemouth Corporation	1.781	1.759	1.755	1.898	2.079	2.233	2.180	2.228	2.264	2.347	39½	101.977	+ 9.558
Bradford Corporation	6.445	5.982	6.950	6.144	5.803	7.242	7.384	7.658	6.858	7.405	39	300.805	+ 33.675
Brighton Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Bristol	4.572	4.383	4.266	4.733	4.595	5.438	5.339	5.536	5.681	5.648	52	283.029	+ 29.433
Burnley Corporation	1.604	1.502	1.544	1.627	1.745	1.808	1.844	1.812	1.807	2.054	—	—	—
Burton-on-Trent Corporation	250	248	261	339	259	331	323	334	374	346	39	12.332	+ 1.384
Bury Corporation	1.242	1.171	1.139	1.238	1.310	1.504	1.503	1.384	1.536	1.477	39½	64.688	+ 8.476
Cardiff Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Chatham and District	1.172	1.028	1.078	1.058	1.076	1.121	1.084	1.080	1.035	1.133	52	66.158	+ 2.167
Chesterfield Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Colne Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Cork Electric	474	480	445	470	723	545	548	521	525	908	52	28.968	+ 2.283
Croydon Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Derby Corporation	979	933	997	1.163	953	1.255	1.216	1.158	1.331	1.045	39	47.601	+ 3.119
Dover Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Dublin and Lucan	*	...	...	...	...	...	...	...	...	...	—	—	—
Dublin United	6.052	6.070	5.973	6.552	...	6.837	6.826	6.787	7.010	...	51	343.395	+ 33.285
Dundee City	1.317	1.305	1.279	1.341	1.380	1.526	1.542	1.508	1.492	1.590	32½	50.029	+ 5.000
East Ham Corporation	1.167	1.158	1.134	1.137	1.077	1.248	1.245	1.218	1.229	1.224	39	54.046	+ 3.389
Exeter Corporation	390	363	341	400	363	370	349	352	367	369	39	15.780	— 137
Gearless Motor 'Buses	*	...	...	...	...	...	...	...	...	...	—	—	—
Glasgow Corporation	23.347	23.130	22.706	22.941	23.922	27.033	26.644	26.475	26.074	26.830	30½	805.041	+ 94.184
Glossop (Urban Elec. Supply Co.)	134	126	125	129	...	165	172	167	159	...	51	7.934	+ 876
Halifax Corporation	1.872	1.865	1.778	1.815	1.910	2.164	2.220	2.226	1.995	2.398	38½	95.451	+ 9.155
Halifax Corp. Motor Omnibuses	47	44	44	45	51	50	49	50	43	56	38½	1.893	— 33
Hastings and District	850	834	840	928	1.050	1.013	953	988	990	1.186	52	63.889	+ 10.127
Huddersfield Corporation	2.595	2.496	2.546	2.642	2.513	3.118	3.120	3.056	2.962	3.251	39	125.412	+ 14.214
Hull Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Ilford U.D. Council	601	604	581	682	534	730	724	728	755	694	39	29.890	+ 3.372
Ilkeston Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Ipswich Corporation	393	383	397	459	410	549	515	550	609	572	39	26.550	+ 6.290
Isle of Thanet	236	214	222	251	264	143	140	144	172	204	13	2.126	— 1.332
Kilmarnock Corporation	176	161	156	169	185	211	209	204	207	222	32½	6.555	+ 773
Lanarkshire	2.186	2.111	2.096	1.969	...	2.808	2.841	2.901	2.738	...	51	141.596	+ 24.233
Lancashire United	1.730	1.691	1.618	1.422	1.924	2.383	2.413	2.410	2.324	2.474	52	122.565	+ 28.122
Leeds City	9.331	9.052	9.256	9.449	9.584	11.020	10.908	10.643	10.863	11.535	39	432.534	+ 48.124
Leicester Corporation	3.301	3.149	3.202	3.552	3.276	4.029	3.999	4.068	4.248	3.935	—	—	—
Leith Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Leyton U.D. Council	1.445	1.407	1.453	1.393	1.380	1.813	1.819	1.746	1.733	1.827	39	73.446	+ 10.224
Liverpool Corporation	13.963	13.951	13.685	15.017	13.392	16.447	16.577	16.863	16.878	15.862	51½	814.098	+ 81.191
Llandudno and Colwyn Bay	162	220	177	196	228	225	214	223	222	270	4	929	+ 108
London County Council	45.367	44.565	45.289	43.116	40.472	55.358	55.797	54.212	54.517	50.328	38½	2.139.506	+288.611
London General Omnibus	*	...	...	...	...	...	...	...	...	...	—	—	—
London United	*	...	...	...	...	...	...	...	...	...	—	—	—
Lowestoft Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Maidstone Corporation	185	176	175	190	209	225	220	210	215	263	39	9.546	+ 1.000
Manchester Corporation	17.998	17.400	16.594	17.762	16.537	21.044	21.100	20.827	23.305	20.284	39	812.398	+ 79.467
Metropolitan Electric Tramways	*	...	...	...	...	...	...	...	...	...	—	—	—
National Steam Car	*	...	...	...	...	...	...	...	...	...	—	—	—
Nelson Corporation	210	172	...	...	...	237	218	...	...	...	36	8.507	+ 753
Newcastle-on-Tyne Corporation	6.742	6.570	6.658	7.000	6.384	8.202	8.010	8.100	8.025	7.084	39	—	—
Newport (Mon.) Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
New St. Helens and District	965	963	947	849	1.136	1.205	1.234	1.249	1.220	1.359	26	37.410	+ 8.93[illegible]
Northampton Corporation	710	670	704	781	754	844	809	829	866	912	39	32.897	+ 4.68[illegible]
Nottingham Corporation	3.778	3.554	3.661	3.626	3.339	4.605	4.531	4.514	4.588	4.563	39	173.336	+ 20.572
Oldham Corporation	2.192	2.141	2.042	2.265	1.897	2.752	2.734	2.517	2.727	2.642	40	113.126	+ 14.906
Portsmouth Corporation	2.149	2.054	2.148	2.318	1.946	2.504	2.439	2.450	2.549	2.262	—	—	—
Preston Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Provincial	1.892	1.839	1.841	2.093	1.907	2.282	2.227	2.252	2.394	2.402	12½	29.905	+ 3.969
Reading Corporation	848	792	808	855	877	1.056	1.052	1.043	1.053	1.038	39	41.273	+ 7.651
Rhondda Tramways	1.264	1.239	1.162	1.184	1.638	1.556	1.513	1.573	1.534	2.065	52	78.942	+ 11.971
Rochdale Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Rotherham Corporation	1.495	1.494	1.494	1.361	1.725	1.829	1.880	1.876	1.923	1.742	40½	71.954	+ 10.104
Salford Corporation	5.126	4.951	3.403	4.756	5.023	6.583	6.597	6.326	7.080	5.717	39½	260.690	+ 47.189
Sheffield Corporation	10.496	10.464	10.634	9.933	10.489	12.658	12.519	12.804	12.878	11.100	40	483.189	+ 60.262
Southampton Corporation	1.573	1.528	1.552	1.578	1.577	2.090	2.068	2.039	2.075	1.996	38½	79.748	+ 14.384
Southend-on-Sea Corporation	644	627	636	602	648	629	659	610	639	664	39	35.779	— 981
South Metropolitan Tramways	*	...	...	...	...	...	...	...	...	...	—	—	—
South Shields Corporation	808	780	804	844	871	937	934	948	997	944	39	37.358	+ 4.324
Sunderland Corporation	1.565	1.548	1.648	1.791	1.692	1.877	1.849	1.831	2.004	1.858	39	72.030	+ 6.866
Sunderland District	624	594	...	...	...	746	802	...	...	...	6	4.684	+ 965
Swindon Corporation	200	180	190	206	253	257	254	250	263	295	38½	10.538	+ 2.499
Torquay Tramways	463	458	423	458	559	641	628	622	620	715	52	34.637	+ 4.130
Tramways (M.E.T.) Omnibus Co.	*	...	...	...	...	...	...	...	...	...	—	—	—
Tyneside Tramways and Tramroads	...	...	...	...	615	...	...	...	...	793	26	22.771	+ 5.778
Wallasey Corporation	1.166	1.133	1.114	1.247	1.125	1.404	1.388	1.432	1.450	1.404	39½	62.030	+ 7.951
Walsall Corporation	776	761	764	819	726	1.029	995	1.043	1.064	1.159	39	38.828	+ 6.182
Walthamstow U.D. Council	926	907	894	1.002	834	1.143	1.113	1.109	1.068	1.120	39	48.227	+ 286
Warrington Corporation	524	500	481	485	...	701	694	678	702	...	38	21.582	+ 2.647
West Ham Corporation	2.912	2.971	3.048	2.979	1.790	3.633	3.692	3.616	3.636	3.471	38½	142.563	+ 17.218
Wigan Corporation	1.700	1.619	1.601	1.456	1.781	2.143	2.137	2.142	2.106	2.213	39	78.645	+ 12.656
Wolverhampton Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Yorkshire (West Riding)	1.768	1.578	1.630	1.630	2.023	2.387	2.220	2.057	2.317	2.528	52	111.585	+ 20.242

* TRAFFIC RETURNS SUSPENDED.

Owing to the European war, the Government have taken over the railways of Great Britain as from August 4, 1914, and the issue of traffic returns has been suspended. Consequently the traffic returns of the electric railways which usually appear on this page cannot be given.

The Publication of the Traffic Returns of the Tramways marked with an asterisk in the above table have also been suspended during the war.

TRAMWAY DIRECTORIES.

A useful feature of this issue is the directory of electric railways and electric tramways which will be found among the advertising pages. This directory contains the names of the chief officials and the principal particulars relating to each undertaking.

THE TRAMWAY AND RAILWAY WORLD

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Robert Steel, the well-known Wholesale Milk Dealer of Glasgow, writes:

"I enclose a photo of my 2-Ton Daimler with body and load on as used every day since I received it on March 26th, 1916. It has done about 23,000 miles, and has not varied 10 minutes in the course of its 20 mile daily run under contract —lifting 12 farmers' milk.

MY REPAIR BILL IS NIL

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Daimler

The Daimler Co. Ltd.
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MOTOR VEHICLES.

TWO MODELS

TO CARRY 30/45 CWT. & 3½ TONS RESPECTIVELY

"The Design and Construction are Throughout of a Character, which it would be Exceedingly Difficult, if not Impossible, to Improve Upon."

RAILWAY GAZETTE, March 31, 1916.

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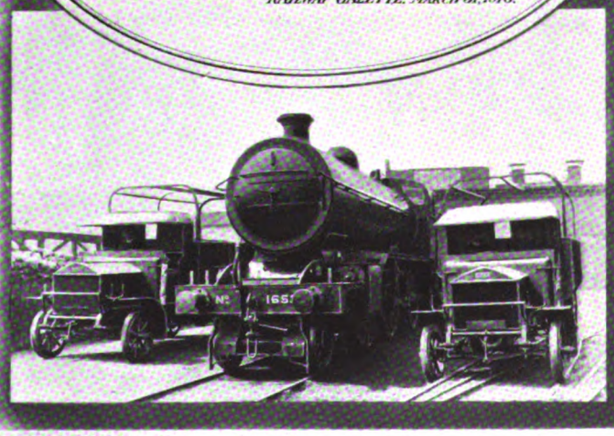
USED BY THE LARGEST CARRYING COMPANIES AND COMMERCIAL HOUSES.



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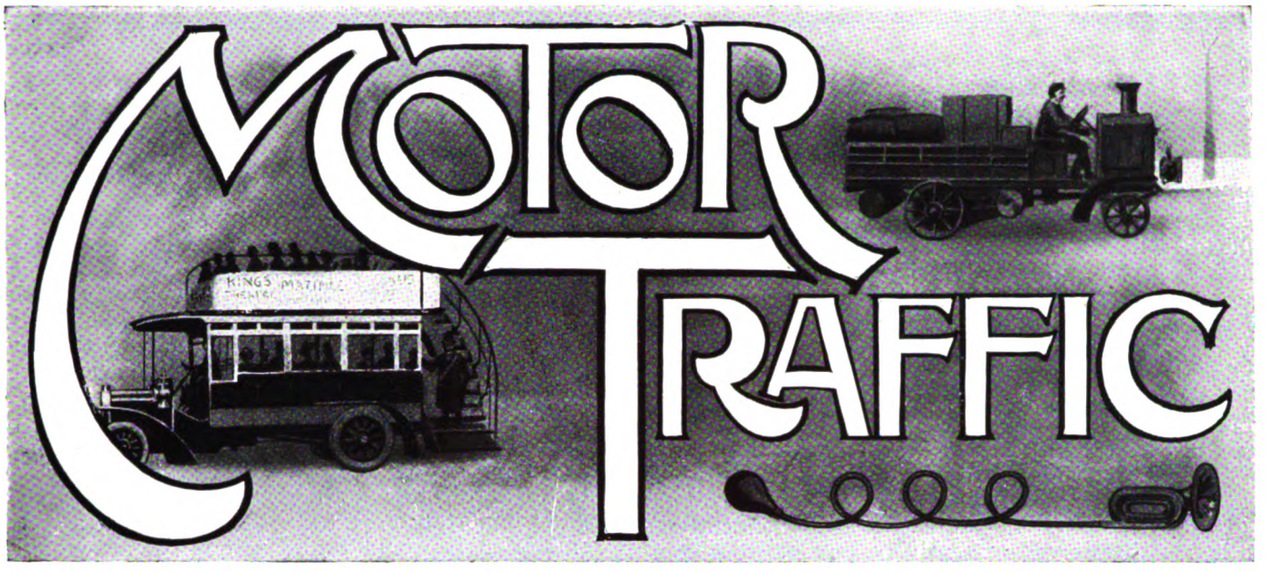

Broadly speaking, the prospects of the British motor industry have, we think, been somewhat improved during the past year; though it stands to reason that nothing is as yet certain. Elsewhere we deal in detail with the proposals that have been put forward with a view to arranging for the disposal of war-worn vehicles to the best advantage of the Government, the manufacturer, and the user. This scheme was framed some time ago, but it was only during the latter part of 1917 that the necessary machinery was created to enable it to receive the consideration which it deserves. There is now every indication of some such scheme being adopted, and if this could be finally settled the British manufacturer would be relieved of a danger which has been overshadowing his prospects more and more since he became solely a Government contractor.

* * * * * *

The past year has also given indication of probable assistance in another direction. At the time of writing the report of Lord Balfour of Burleigh's Committee on After-War Trade has not been published; but it is understood that the majority, including representatives of the old free trade party, is in favour of a protective duty on imported manufactured and semi-manufactured goods. The effectiveness of any such measure as a means of safeguarding the home industry depends upon the scale of tariff adopted. In this particular industry a small tariff would be little if any better than none. The greatest competitor is a producer upon a huge scale possessing the advantage of an immense home market, and the further advantage of not having had his business upset by the war over so long a period. He has had every opportunity of displacing the British vehicle, and if our home industry is to be given prosperity in the future, the protection afforded to it during the first few years after the war must be adequate to re-establish it in its old position. Once that is done it will no doubt be competent to fight its own battles. We must, however, remember that we shall have to find markets for much enlarged outputs, and employment of a more remunerative character than hitherto. Consequently it is in the interest of the motor user to take a broad view. It will not serve us to be able to obtain vehicles a little more cheaply than would be possible if a heavy tariff were imposed if, when we have got them, we have to pass through a period of acute depression accompanied by widespread unemployment. Whatever permanent policy we may adopt, there seems to be, then, a very strong case for the imposition of substantial duties for a short period.

The past year has seen the formation of the Ministry of Reconstruction, which takes us a step nearer the solution of the difficulties which will no doubt arise owing to the shortage of various essential materials when manufacturers come back to their normal production. Presumably this shortage will be made good as promptly as possible by reserving tonnage almost exclusively for the import on the one hand of raw materials and food, and the export on the other of our manufactured goods. Under these circumstances the import of motor vehicles and other manufactured articles will probably have to be much restricted for some months, which will give our own industry a little time in which to set its house in order without acute competition from abroad. This period will, however, only be a brief one, and will terminate as soon as our own people, by being in possession of adequate supplies of raw materials, are really enabled to produce their full output under reasonably favourable circumstances.

* * * * * *

Under the circumstances it was unavoidable that the year 1917 should be, to all appearances, somewhat unproductive as regards progress in the design of motor vehicles. It must not be assumed, however, that because such progress is not patent to all it is not being made. Our manufacturers have during the year continued to accumulate much valuable experience directly resulting from the operation of large numbers of vehicles under a great variety of conditions, having nothing more in common with one another than the fact that they are uniformly unfavourable. By the time we get back to normal conditions we ought to have little to learn with regard to the production of motor vehicles for heavy service either in oceans of mud and on broken roads, or on the sandy tracks of tropical countries. The old argument, to the effect that British vehicles are not suitable for world-wide use because they are built primarily for service in the country which has the best road system in the world, will never hold good again. The work of military transport has searched out every little fault and failing in detail, and has also served to indicate the broad features of design desirable for a vehicle which may be honestly described as combining the virtues of the home and the colonial model. Naturally we are not yet told much as to the conclusions to which manufacturers have been led. So long as the duration of the war remains indefinite, nobody is much inclined to attempt to indicate his exact intentions in the matter of post-war models.

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MOTOR TRAFFIC.

In a sense it is regrettable that this is so. We should all like to know, were it possible, what the manufacturers mean to offer us and the approximate price at which it will be available. It is particularly important that agents and prospective agents should have early information on such points. We know that certain of our Allies, who have recently been more favoured by circumstances than we have ourselves, intend to make a strong bid for the oversea markets of the Empire. Their representatives are on the spot, and their programmes are at least fairly clearly defined. The agent feels that he cannot wait for ever, and that if he waits too long he may fall between two stools and fail to get the representation of a first-class manufacturer of the type of vehicle that he wants. It is consequently to be hoped that it will presently be possible to give at least some indication to the agents as to what British manufacturers mean to offer them.

ELECTRICAL VEHICLE PROGRESS.

The electric vehicle is making real progress toward popularity in spite of the strange indifference with which it was received by electrical engineers and those concerned in electric supply undertakings in this country. Much missionary propaganda has been necessary to interest electrical men in the prospect which is opening before them, and the Electric Vehicle Committee may be congratulated on the increasing success of their work. In the current quarterly issue of their magazine the committee say that at present the "demand for electric vehicles is far in excess of the supply available in war time. Repeat orders are the feature of the market." Adverting to the failure of some electricity undertakings even yet to provide facilities for charging batteries, it is claimed that a large demand can be handled without spending a penny on mains or services, and without adding a kilowatt to the maximum demand.

In an article headed "War and After War," the writer says:—"It has been demonstrated to the full that electricity is a most efficient substitute for petrol and horse traction in short-radius transport. If we could transform street cleansing and other municipal services by using electric vehicles, and do all coal carting, goods distribution, and other local conveyance by battery traction, there would be an enormous saving in petrol, horses, and feeding stuffs, in addition to economies in labour and other costs."

Details are given of the fleet of sixty vehicles belonging to Harrod's Stores, all having batteries of the type supplied by the Edison Accumulator Company, Limited. The great majority are of half-ton capacity, the heaviest of the few exceptions being 2-ton. They are used for house-to-house distribution, or for the conveyance of supplies from markets. For service of this kind—which is an essential service in every large business house—the electric vehicle provides exactly those characteristics that are required. In most cases the night charging is sufficient for the day's run (which seldom exceeds 50 miles), but in certain instances, particularly with the heavy vehicles, a boosting charge is given during the day.

Mr. F. Ayton, hon. secretary to the Electric Vehicle Committee, continues his illustrated article on "Methods of and Plant for Battery Charging." Full details are given by the borough engineer of Ipswich of the cost of working a 3-ton tip wagon.

RETURNED MILITARY VEHICLES.

How Can They be Disposed of to the Best Advantage?

The problem of the war-worn motor lorry and what is to be done with it is one that concerns the Government, the motor manufacturer, and the potential buyer of commercial motors. From the point of view of the Government, the question is how to market tens of thousands of vehicles without so far upsetting the balance of supply and demand as to lead to the prices realised being ridiculously small. From the point of view of the manufacturer, the whole matter is of the highest importance. Even if the war reaches a speedy termination it would probably not be far wrong to state that about a hundred thousand lorries will have been put into military service. Of these perhaps two-thirds will be the products of British works, the other third being almost entirely American. We are, of course, dealing here only with the provision made in connection with the British forces in the field. It is inconceivable that on the termination of hostilities there will be less than about 25,000 such motor lorries in serviceable condition. Nearly all of them will be of 3½-ton capacity. In addition there will be several thousand touring cars and large numbers of motor bicycles. The principal problem is, however, the motor lorry.

Practically every British commercial motor manufacturer will be represented by a large fleet of vehicles. It is most unlikely that any great proportion of these will be required to continue in Government service. Even if our standing army remains very large, the principle of Government ownership of motor transport on a very big scale does not appear to be sound except in time of war, unless motor vehicles of about the right carrying capacity are only in use in quite small numbers by the commercial community. The chances are that the Government will wish to retain hundreds, but not thousands, of lorries. If the remaining ones are disposed of by auction, or any similar process, the market will undoubtedly be flooded, so far as vehicles of this particular carrying capacity are concerned. The works of the manufacturers are at present best fitted for the production of this particular type. A change in the character of the production will be necessary. There is an increasing shortage in vehicles of other capacities, which must be made up as promptly as possible. At the same time, in view of possible Government needs in the future, it is certainly desirable that 3½ tonners should continue to be built in at least fair quantities.

Meanwhile the reputation of the manufacturers is at stake, because if the returned vehicles are thrown hurriedly upon the market many of them are likely to develop faults consequent upon the character of their past use. The purchaser will then remember simply that the lorry which causes him trouble is the product of a certain firm, and he will forget that he did not buy from the firm, which therefore cannot be held responsible if the lorry does not give satisfaction. Even if its condition is practically perfect, it does not necessarily follow that it is the best thing that the manufacturer could produce were he given a free hand. On the contrary, it is probable that it was turned out at a time when the manufacturer was unavoidably short of certain valuable materials or components. We cannot altogether get over this fact, which is

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unfortunate, because it tends to indicate a lower standard of quality than that to which British manufacturers really adhere. We can at least take steps to prevent the British vehicles being passed on to the public without first being thoroughly repaired and overhauled. Only by seeing that this is carefully done in every case can we prevent the manufacturers' reputations from being unjustly blackened, or save the more or less ignorant purchaser from the risk of getting —at what he supposes to be bargain prices—machines which may be more trouble than they are worth.

Then again, if the manufacturer is to be given a chance of reverting to his normal output, and not going to extremes by the total temporary elimination of a very useful type, we must see to it that the Government vehicles are marketed only in batches, and not in bulk.

Manufacturers have for the past two years been concerning themselves deeply with the question of how to distribute these vehicles with the least possible risk and at the best possible prices. At this point attention should be drawn to the fact that the user or potential user has no real right to expect to be able to buy these machines at scrap prices. They are the property of the community as a whole, and there is no reason why the community should give them away. Roughly speaking, the scheme advanced by the manufacturers is the following:—

It is suggested that the vehicles, as they return and cease to be required by the Government, should be passed in batches to their manufacturers, the size of each batch being regulated so that the whole process of distribution of the fleets shall take, in all, about two years. Each batch of vehicles, on arriving at its manufacturer's works, should be thoroughly examined with a view to overhaul and repair. A price for this work should be agreed in each case between the manufacturer and the Government inspector, a reasonable but not an excessive profit being allocated to the former. This work would help to keep the shops busy at a time when otherwise it may be very difficult to provide regular employment for all those who have a right to expect it. When the repair or overhaul of a vehicle has been completed, it would be handed over to the sales department of the manufacturer, being accompanied by a guarantee of sound condition which would materially increase its market value. We may regard this guarantee as a fair justification for the profit accruing to the manufacturer on the work of repair. On the average the increase in selling value directly due to the guarantee would probably be quite equal to the cost of the repair or overhaul itself. It would certainly be more than equal to the profit made by the manufacturer upon the work.

The vehicles would now be sold either direct or through the manufacturer's agents. The latter would be the preferable course in most cases, because the welfare of the agent must be considered. If the whole thing were handled systematically, it is probable that the sales of new vehicles would not be seriously affected. Both the new and the second-hand vehicle would represent fair value for money. The man who could comfortably afford a new one would not, in most cases, insist upon taking an overhauled machine. On the other hand, this class of machine would be the means of bringing to the manufacturer new clients who could not otherwise have afforded his prices. Thus the existence of these machines might after all prove positively beneficial to the industry. It would, of course, be necessary to impose some time limit, within which the manufacturer would have to get rid of each batch. Otherwise if he chose he might merely take his profit on the repairs, and subsequently neglect to watch the Government's interests. There would, however, have to be a clause in the agreement which would provide that the balance of any batch of machines remaining unsold after an agreed period had elapsed would revert freely to the Government for disposal by any convenient means. With such a proviso in force it would pay the manufacturer better to try and get rid of them himself than to run the risk of finding himself, later on, selling in direct competition with somebody else, who might be offering large numbers of his chassis at very low prices. Moreover, if the manufacturer or his agent negotiated the sales, a reasonable commission would, of course, be allowed to him.

The whole scheme appears to be practical and reasonable. Much thought has not led to any sound alternative being proposed. Presumably the next step is for this scheme to be carefully considered by the committee which has now been appointed to go into the question of the disposal of surplus Government stores. The constitution of this committee is, we believe, one of the early results of the formation of the Ministry of Reconstruction. It has come into existence none too soon, and it must get to work promptly for the reason that the problem with which it has to deal is one which will not wait until the war is over. Already small batches of vehicles have been put up to auction, and the tendency will be for this unfortunate practice to extend until a definite order is issued to put an end to it. It would, we suggest, be a wise precaution if the committee now formed were to arrange for such an order to be promulgated, pending a definite decision as to the exact scheme to be adopted. Doubtless whatever this scheme may be, it will be coupled with provision for the absorption of some of the machines—and particularly those of foreign make—on reconstructive building work abroad. Others will be used for the work of road construction at home, and for various duties which can be suggested by Government departments and local authorities. It is to be hoped that the general practice will be to allocate the American vehicles primarily to foreign reconstructive service, leaving the British vehicles, or the bulk of them, to be disposed of in the manner suggested. In some way or other it should be provided that none of the foreign machines shall be permitted to compete with the British products in any of the Empire markets.

RAILLESS CARS AND GOODS.

Replying to an objection raised to the proposal of Halifax Tramways Committee to purchase two railless trolley cars from Dundee Corporation, Alderman Spencer, chairman of the committee, stated that the Corporation might have to go in for goods carrying, and as each of these cars would carry five tons of material at a time their use would relieve the roads of a number of heavy carts. Overhead wires would not be required. The cars would be fitted with accumulators, which would enable a car to run from five to ten miles from the tramway wires. The total cost of the cars and equipment would be £1,900. With petrol at 4s. 6d. per gallon, petrol vehicles would cost nearly twice as much to run, and very few motor vehicles could mount the hills of Halifax with a five-ton load. He believed that railless cars would become one of the most satisfactory and economical means of goods carrying. Leeds and Bradford Corporations were carrying goods in this way, and if Halifax did not want the cars a neighbouring Corporation would take them.

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THE USE OF ARMY LORRIES FOR FOOD DISTRIBUTION.

There can be no question that the distress caused by the shortage of staple foodstuffs will be aggravated to a very considerable extent unless the best use of the available transport facilities in the country is made in the interests of the community as a whole. Hitherto the sole object of the Government transport department has been to supply the requirements of the Government services, and no consideration whatever apparently has been given to the equally important question—from a national point of view—of the possibility of assisting in the distribution of foodstuffs for the civilian population. We readily admit that adequate supplies for the fighting forces should remain a first charge, but we are also convinced that the time has arrived when the cast-iron system which divides the official war service requirements from that of the civil population should be reconsidered, so that the real necessities of the entire community could be faced as a whole. From time to time, through questions in the House of Commons and statements made by responsible persons in various parts of the country with first-hand information, we know that large quantities of foodstuffs purchased for the military authorities have been wasted. In some cases this has been sheer wanton waste, while in others larger quantities than required have been allocated to certain districts, and as it was nobody's business to divert them into civilian channels while fit for human consumption, it was not until they were in an unsound state that the transport department was called upon for the disposal. In normal times, when the recognised civilian supply firms could meet the full requirements of the public from an open market, interference with private enterprise would be resented naturally as quite unnecessary. In the present circumstances, however, it appears to us to be nothing short of the duty of the Government not only to divert all essential foods not absolutely required by the naval and military forces into civilian channels, but so to organise their motor transport service that its units should be available to assist in the distribution of food for the people in congested areas whenever possible. It is an established fact that large quantities of perishable food have been held up at the docks until it has become unfit for human consumption solely on account of the lack of transport facilities, and at the same time in every part of the country large numbers of empty army lorries can be seen almost at any hour of the day or night. In many cases it is reasonable to suppose that these vehicles are being held in reserve for contingencies which might tax their capacity to the full, but without proof to the contrary we are inclined to believe that even in these circumstances work of such national importance, as we claim the feeding of the people to be, could be performed on a properly organised system which would permit of the maximum advantage to the community being obtained, and at the same time, should the necessity arise, the machines could be available in ample time for military purposes whatever the contingency. It is merely a question of organisation, and the breaking down of the barrier between military and civil requirements.

BRADFORD CORPORATION MOTORS.

Invaluable Work of the Trolley Battery Wagon.

In his annual report to Bradford Coporation Tramways Committee, Mr. C. J. Spencer, the general manager, refers to the work of the railless trolley battery vehicle, which is illustrated and described elsewhere in this issue. The report states that in order to meet the serious deficiency in transport services and the shortage of motor spirit, one of the original railless trolley vehicle chassis was adapted to take a long, broad lorry. The vehicle is capable of running by power obtained from the tramway overhead wires, and also by energy from a storage battery carried on board, when it is desirable to work the vehicle along routes where there are no tramways. The wagon is surmounted by a trolley pole to enable attachment to be made to the overhead wire and earth attachment can be effected at will. The accumulators employed are of the "Edison" type (120 cells) giving a normal voltage of 150. They supply current to the ordinary 500-volt motors, the only difference being that the motor with battery supply runs correspondingly slower, that is, pro rata to the voltage; but as the torque of a series motor is proportional to the current passing through the windings, the vehicle is capable of climbing steep gradients, but at a speed corresponding to the low voltage.

Whilst the vehicle is running on the 500-volt circuit the batteries may be in series with the motors, thus becoming charged whilst the car is in service. The battery is capable of running the vehicle about ten miles before requiring recharging. The change-over from battery to overhead wire is merely a question of throwing over a switch, the putting of the trolley on the wire and the earth connector on to the steering gear and rail.

The first trials of this vehicle were in the conveyance of wool between the railway yard and various warehouses in the city, and demonstrated the capacity and capability of the vehicle for dealing with the carriage of goods partly on and off the tramway routes. Recently, however, it has been engaged upon the carriage and distribution of material from the tramways stores to the various depots, and in the conveyance of material to and from the railways, for which work it has proved almost invaluable.

The report also refers to the parcels delivery department, in connection with which a 3-ton petrol lorry has been engaged the whole of the year in haulage for a shell factory, and since November, 1916, the parcels department has undertaken cartage from the Corporation chemical works by means of another of its vehicles which is now being used exclusively for that purpose.

The Railless Trolley Services.

From the railless trolley vehicle services there was a total revenue of £10,705, or 7·181d. per car-mile, an increase of £1,925, or ·645d. per car-mile. As against this increased revenue of £1,925, there is an increase in operating expenses of £2,915. There is a deficit on this account, after meeting interest and sinking fund charges, of £3,177. The operation of this system in sparsely populated districts was never intended to be profitable, and the feeding value to the tramways proper must be taken into consideration when analysing the accounts. The passengers carried during the year by the railless vehicles numbered about 3½ millions.

POSTAL AERIAL LINE.

Arrangements for the establishment of a postal aerial line between England and France are said to be well advanced. The British Government has yet to complete a definite agreement. A French mission has already consulted with the British Air Board, and the Director of Postal Services has negotiated with the British Post Office for a convention.

Mr. Handley Page, of the Rolls-Royce Company, recently gave an interesting discourse on the flight made from this country by Squadron Commander Savory and a small crew for the purpose of bombing Constantinople. The Rolls-Royce engine was used in the machine, and the base for the expedition was near Salonica, the distance being 320 miles. The journey to and from the base to the Turkish capital occupied seven hours. There was no trouble at all with the engines. The flight showed the possibilities for mail and freight carrying in times of peace. This latter would help to remove danger of future war, by making the peoples of the world better acquainted with each other.

The Parent Tire Company.—The directors' report for the past year shows a profit of £115,658. The directors have made appropriations of 5 per cent. on preference shares, 8 per cent. on ordinary shares, and 11 per cent. on deferred shares, absorbing £116,058. A balance of £96 0s. 5d. is carried forward.

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PETROL CONTROL DEPARTMENT.

REPORT OF THE SELECT COMMITTEE ON NATIONAL EXPENDITURE.

In the report of the Select Committee on National Expenditure, which was ordered by the House of Commons on December 13 last to be printed, the Committee state :—

"The principal functions of the Petrol Control Department are (1) to control by means of licences the consumption of motor-spirit by the civil population of the United Kingdom, and (2) to collect the licence duty imposed by Section 15 of the Finance Act, 1916. Before a licence is issued to a consumer the duty has to be paid to the department, which has thus received £456,000 net in 15 months, whilst on the other side the cost of the department was at the rate of about £32,000 a year. Inspectors are being appointed to report irregularities in the local sale and supply of petrol, and prosecutions are instituted by the Board of Customs and Excise at the instance of the Petrol Control Department.

"The staff numbers about 350, of whom 17 are civil servants lent from other departments. Everything possible is done to reduce the amount of overtime work.

"A suggestion was made as long ago as December last that the petroleum administration should be concentrated in one organisation with a view to economy. A statement as to the Petroleum Executive was made on behalf of the Government in the House of Commons on October 18, to the effect that in order to co-ordinate the work of the various Government departments interested in petroleum the Petroleum Executive, with Mr. Walter Long as its head, had been formed ; and that in addition to that executive and the Pool Board, there was only one committee dealing with matters in connection with petroleum. These arrangements, however, seem to the Committee scarcely to meet criticisms which have been made, and it suggests that the possibility of further concentration might be considered."

PETROLEUM POOL BOARD.

Reporting on the Pool Board (Petroleum Supplies) the Committee say :—

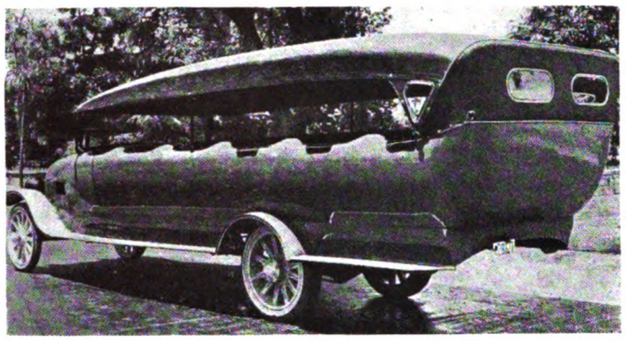
"The Pool Board (Petroleum Supplies) is a voluntary association of importing companies, formed at the request of the Government for the purpose of the better assurance, as from April 2, 1917, to the Government, the trade and the public of the necessary supplies of petroleum products, and for the purpose of the release of man-power. The chairman and the secretary are Government officers. The individual companies effect their own purchases abroad, and the board control the whole shipments to this country and their further disposal, except full cargoes for the Government. Prices may be fixed or limited by the Government if the companies increase prices to a greater extent than costs have increased since April 2, 1917. An investigation into the costs is proceeding at present, and the Committee is of opinion that the powers of the Board of Trade should be systematically used to secure the supply of petrol for the public at a price based on the ascertained costs.

"Much of the work done for the Pool Board is unpaid so far as the National Exchequer is concerned, on which a paid staff of 24 only is borne. The normal working hours are 48 per week, and any necessary overtime work is performed without extra payment. The Board appointed their own accounting staff in August, and there will probably be available in January, 1918, full accounts and information as to imports."

SIGHT-SEEING CARS AT LOS ANGELES.

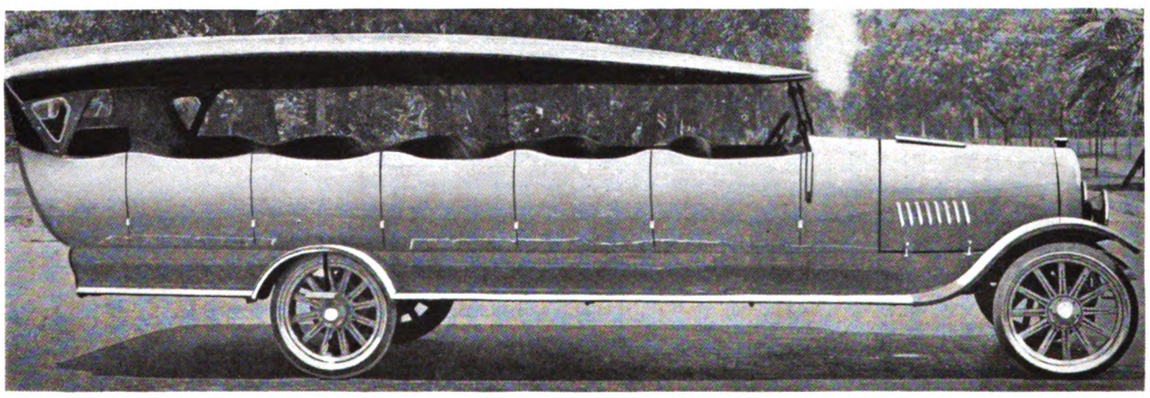
The city of Los Angeles is said to have developed sight-seeing by motor car to a greater extent than any other American district. What in this country is known as the char-a-bancs is used, not only for providing tours for the thousands of visitors who come to the city for pleasure and wish to join in sight-seeing trips, but also for trips carrying crowds to suburban real estate sub-divisions and for transporting cinema films.

As the result of excessive competition the fares have become so low that practically constant operation is required to make this service remunerative. The Standard Auto Tours decided that the most attractive looking and comfortable vehicle would obtain the greatest share of the business. The result is the car shown in the illustrations, the body of which was made by the George R. Bentel Company, who chose as their type of streamline design that of the Mercer body. The body is mounted upon a special Kimball 3-ton chassis, built by the Kimball Company, Los Angeles. The body is 26 ft. long, with a shell of galvanised steel. The top is the largest one-man operated top yet made, being 18 ft. 6 in. long. Half-inch elliptic springs are used for mounting the body, and the vehicle has solid tires.



Rear View of 29-Passenger Char-a-Bancs.

Comfortable riding is secured by the use of 10-in. cushions, and the upholstery is in leather. In its finish the body is equal to that of a high-class passenger car, and is painted in azure blue. The wheels are cream coloured, and the Pantasote top is black. The design and construction of the body were carried out under the direction of Mr. Frank K. Weidler, superintendent of the George R. Bentel Company. The body cost $2,000, exclusive of the chassis.



Attractive Passenger Char-a-Bancs, Seating 29 Passengers.

The car seats 29 persons. Five of the seats accommodate five persons, but the front one, owing to the tapering body, is wide enough only for four. The extreme length is 26 feet ; the width from running board to running board, 6 ft. 4 in. ; the wheel base 20 ft. 7 in. The engine is a six-cylinder Wisconsin, equipped with electric starter, generator, lights, etc.

Another Los Angeles car, claimed to be the largest sight-seeing car yet built, is one made by the Kimball Truck Company, whose engineer, Mr. G. A. Eichelberger, was the designer. Its general dimensions are :—Overall length, 30 ft. 10 in. ; width from running board to

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running board (which are folded in when truck is on the road to give more clearance), 8 ft. 6 in.; wheel base, 20 ft. 7 in.; overhang aft rear axle, 9 ft. 6 in. It has ten cross seats, each accommodating six persons, making a total of 60. The equipment includes a folding type top, electric dome lights, wind shield, and curtains. The vehicle has a speed up to 17 miles an hour and a rated capacity of 4 tons.

Both of the chassis are equipped with the Kimball gasifier for burning distillate as fuel. Quietness and easy riding are given by special spring suspensions in each case and the Hotchkiss type of Timken worm drive.

THE SOLID TIRE AND ITS OWNER.

Under the above title Mr. H. Shankland, of the Shrewsbury and Challiner Tyre Company, Limited, has just issued a pamphlet which will be found of much interest to users of all classes of solid tires, as it deals in a very practical manner with the various causes that lead to avoidable tire troubles. After referring to the two types of "solids" that did duty prior to the introduction of the endless types built up on steel foundation bands during the years 1900-4, viz., that in which the rubber band was held in position by the grip or clinch of the steel channel into which it was inserted (shown in Fig. 1), and the later pattern "cup" tire, wherein two wires assisted in keeping the tires in position (Fig. 2), the writer of the pamphlet refers to the development of the band type tire, now obtainable in suitable sections for loads ranging from one ton to twelve tons, and carrying the makers' guarantee of 10,000 miles.

In dealing with the various things that users do and should not do, the writer does not suggest that all tires are perfect, and that the fault of short mileage is always due to neglect or abuse on the part of the owner or driver. At the same time he is evidently of the opinion that far better results could be obtained if reasonable attention were paid to the care and use of the tires. Unfortunately there appears to be an opinion among a large number of users that a solid tire requires no attention. They assume that all that they require to do is to see what mileage is run, and if less than the 10,000 guaranteed by the maker are secured, to order a new tire and get a rebate for the shortage on the original one. Experienced users, however, have discovered that a little interest and care is the best policy, for not only can the guaranteed mileage frequently be exceeded, but the vehicle be kept in continuous service. The following points are mentioned as well worthy of attention:—

1. Care in starting the vehicle and in applying the brakes.
2. When unable to avoid loose metalled roads—drive slowly. Serious damage may be inflicted on a tire if driven at a fast speed over loose stones.
3. Remove at the end of each day's run all embedded stones or foreign matter, or stones wedged between twin tires, to avoid further penetration into the rubber.
4. When standing for long periods, the vehicle should, whenever possible, be lifted, in order that the weight of the vehicle may not be confined and rest continuously at one particular part of the tire.
5. Tires should not stand in oil or spirit on the garage floor, as frequently occurs; it is liable to cause early deterioration of the rubber.

One of the most prolific causes of solid tire troubles in the opinion of the author is overloading. Heavier loads than that specified for the section should not be carried even for short journeys, as a tire, once compressed beyond its elastic limit, irreparable damage occurs, and the tire is robbed of its vitality. The disintegration is permanent, and no method of treatment will restore it to its normal state. Alignment, or rather non-alignment, is another important matter dealt with in the pamphlet. In this connection some idea of the grinding away of the tires can be gathered by the fact that it is estimated that a pair of 36 in. diameter wheels $\frac{3}{8}$ in. out of truth would be 120 feet apart at the end of a mile if allowed to run free. Particulars are given of a simple but efficient apparatus by the use of which users can make their own test at short intervals, and thus quickly detect this cause of trouble.

Amongst a number of points of importance to all users of solid tires who are anxious to reduce their running costs, which are dealt with in the pamphlet, are flats in solid tires, anti-skid devices, rubber tires versus steel tires, standardisation of wheels and tire dimensions, mileage recorders, etc.

The object of this publication by the Shrewsbury S.T. and Challiner Tyre Company, Limited, is the creation of keener interest in the use of solid tires, as it is believed that much improved results can be obtained where reasonable care is exercised. Copies of the pamphlet will be sent on application to the works at Ardwick Green, Manchester, or to the London office, Gillingham Street, S.W.

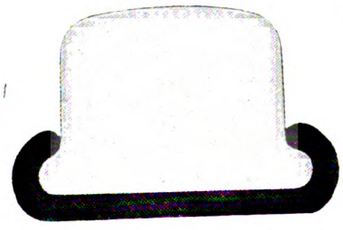

Fig. 1.—Original Form of Solid Tire.

Fig. 2.—Wired-on Type.

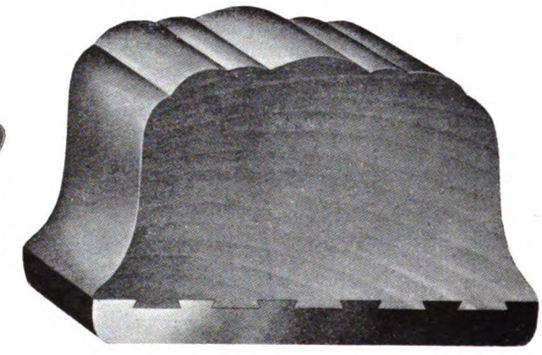

Fig. 3.—Steel Band Type Tire.

INSPECTION OF COMMERCIAL MOTORS.

The twelfth annual inspection of commercial motors and examinations of drivers, organised by the Commercial Motor Users' Association with the object of encouraging drivers to take a personal interest in the driving and condition of their vehicles, and to run them without accident, will take place in London during May, 1918.

Prizes will be awarded to drivers for results obtained in practical, written, and oral examinations, coupled with the inspection of their vehicles under running conditions. In this way it is hoped to carry on the educational work among the drivers which has been one of the aims of the association since its formation in 1903. The inspecting engineer will visit each garage before the examinations, and his reports on these visits, together with the marks obtained by the drivers in the examinations, will be recorded by the committee, and the following rewards based thereon:—

Class I.—Championship Prizes (Practical and Written).—Steam Section—1st, £10; 2nd, £5. Petrol Section—1st, £10; 2nd, £5; together with medals and certificates.

Class II. Prizes (Written Examination).—1st, £5; 2nd, £3; 3rd, £2; and 10 prizes of £1 each in each section—petrol, steam, and electric—together with badges and certificates

Class II. Prizes (Oral Examination).—Amounting to about £50 in total value, sub-divided into cash prizes of £2, £1, and 10s. each.

Members of the association may enter any number of their drivers free, and non-members upon payment of a fee of 10s. for each driver entered. Entries must be received not later than January 31, 1918.

Full particulars and entry forms may be obtained from Mr. F. G. Bristow, secretary, Commercial Motor Users' Association, 83, Pall Mall, London, S.W.1.

The contributors to the prize fund include several petrol companies, Dunlop Rubber Company, Fodens, Limited, Avon India-rubber Company, Daimler Company, Limited, R. Garrett and Sons, Limited, Albion Motor Car Company, Belsize Motors, Limited, Coventry Chain Company, Limited, St. Helens Cable and Rubber Company, W. H. Wilcox and Company, Limited, Herbert Frood and Company, Clayton and Company, Limited, North British Rubber Company, Limited, Tilling-Stevens, Limited, etc.

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NAPIERS EQUIPPED FOR GAS TRACTION.

The four Napier business vehicles adapted for running on coal gas which are illustrated in the accompanying view are part of a fleet owned by Messrs. Dickins and Jones, Limited, of Regent Street, London, W. Eight of these machines have been in use for some years, and are described by the owners as thoroughly satisfactory and reliable, having given no trouble whatever. The four vehicles as shown in the picture were, we believe, the first business vehicles to run on coal gas in London. They cover from fifty to sixty miles a day, and are very economical in the consumption of gas. The containers hold 210 cubic feet, and on this charge the cars are able to cover 17 or 18 miles, and under favourable conditions they have done as much as 25 miles on a single charge. Messrs. Dickins and Jones purchased the gas containers, but all the tubing for conveying the gas to the engine and the work of adapting the latter was done in the firm's own garage.

Napier Business Vehicles Equipped for Running on Coal Gas.

MOTOR VEHICLES FOR MUNICIPALITIES.

AYR COUNCIL have purchased a motor wagon for refuse removal

WOOLWICH COUNCIL have placed an order for a 6-ton Sentinel steam wagon.

WALSALL ELECTRICITY COMMITTEE have decided to purchase a motor lorry.

SHEERNESS COUNCIL have ordered a steam tractor from Messrs. Aveling and Porter.

MIDDLESBROUGH COUNCIL contemplate obtaining an electrically operated tip wagon.

BOLTON COUNCIL have obtained tenders for the supply of an electrically propelled wagon.

LANCASTER COUNCIL propose to borrow £6,000 for the purchase of additional electric omnibuses.

DERBY COUNCIL have placed an order with Edison Accumulators, Limited, for an electric omnibus.

HAMPSTEAD COUNCIL have acquired two Edison electric vans for the medical officer's department.

GRIMSBY COUNCIL have accepted a local tender for the supply of a motor ambulance for the sanitary department.

LUTON COUNCIL have been recommended by the Fire Brigade Committee to purchase a second motor fire engine with escape attached.

DEWSBURY COUNCIL have placed an order for the supply of spare parts for the electricity department's battery vehicle with Messrs. Mossay and Company.

WALSALL TRAMWAYS COMMITTEE propose to provide an omnibus for the conveyance of the Dunlop Rubber Company's employees to and from the factory at Erdington.

WALSALL COUNCIL have ordered six omnibuses from the Daimler Company, for delivery after the termination of the war, the price to be subject to the acceptance of the Council.

MARYLEBONE COUNCIL have been informed by Straker-Squire Limited, that in consequence of the Ministry of Munitions having granted only a Class "C" priority certificate, they will not be able to deliver the motor road washer and vacuum gully cleaner as soon as was hoped.

ILFORD COUNCIL have deferred consideration of tenders for motor ambulances pending a reply from the Ministry of Munitions to their application for the loan of an ambulance from the Ministry's transport department.

DARTFORD COUNCIL have applied to the Ministry of Munitions for a permit to purchase a battery vehicle for the removal of clinker from the refuse destructor, in order to effect a saving on the cost of removing the material by contract.

THE METROPOLITAN ASYLUMS BOARD, in consequence of the successful working of two steam tractors and seven trailers in conveying coal and other goods to their asylums, have decided to obtain another tractor and three more trailers.

SOUTHEND COUNCIL have been informed by Messrs. Ransomes, Sims, and Jeffries, Limited, that they will have to increase their quotation for the supply of electric wagons from £932 to £966 each. The Local Government Board having refused to sanction a loan, the Council have communicated with the Member of Parliament for South-east Essex.

SAFETY CRADLE FOR MOTOR VEHICLES.—The London Safety First Council have had submitted to them a safety cradle for horseless vehicles. It has been referred for consideration and report to the Advisory Sub-committee of the Drivers' Educational Committee.

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MOTOR SPIRIT AND GAS RESTRICTION ORDER.

FULL TEXT OF THE NEW REGULATION.

The text of the Motor Spirit (Consolidation) and Gas Restriction Order, 1918, made by the Board of Trade under 2F and 2JJ of the Defence of the Realm Regulations, and dated January 3, was published in the *London Gazette* of January 8. The preamble sets out that it is expedient to include in one Order all the purposes for which motor spirit may be used, and to exercise the Board's powers under the regulations for the purpose of regulating the use and consumption of gas for driving motor vehicles. The text of the Order is appended.

The Board of Trade, in exercise of their said powers, hereby order as follows :—

DEFINITIONS.

(1) In this order :—

" Petrol or petrol substitute " means any inflammable liquid substance capable of being used for the purpose of driving internal combustion engines, whether such substance has been or is liable to be taxed or not.

" Gas " means any form of gas capable of being used for the purpose aforesaid.

" Motor vehicle " means any vehicle or cycle propelled by means of an internal combustion engine or by means of a steam engine of which the fuel is either wholly or partly petrol, petrol substitute, or gas.

" Private motor vehicle " means a motor vehicle in respect of which motor car duty is payable under Section 86 of the Finance (1909-10) Act, 1910.

" Trade vehicle " means a motor vehicle which is constructed or adapted for use and is used solely for the conveyance of any goods or burden in the course of trade or husbandry, and whereon the Christian name and surname, and place of abode or place of business of the person, or the name or style and principal or only place of business of the company or firm keeping the same are visibly and legibly painted in letters of not less than one inch in length.

"Omnibus" means a motor vehicle in respect of which excise duty as a hackney carriage has been, or is liable to be, paid, including a char-a-banc, waggonette, brake, and stage carriage, which is ordinarily used for plying for hire, and in which when so used the passengers are charged separate and distinct fares for their respective places therein.

" Motor cab " means a motor vehicle in respect of which excise duty as a hackney carriage has been, or is liable to be, paid, which is licensed by a police or local authority to stand or ply for hire, and which is not an omnibus.

" Hire car " means a motor vehicle in respect of which excise duty as a hackney carriage has been, or is liable to be, paid, which is kept for the purpose of being let for hire by a person who is a coachmaker, or whose trade or business it is to sell or let vehicles for hire, and which is neither a motor cab nor an omnibus.

" Necessary household affairs " means the obtaining and carrying of food, fuel, stores, medical and surgical requisites, visits to a registered medical practitioner, dental surgeon, legal adviser, professional agent or bank, the conveyance of children or young persons to or from a school, college, or place for the purpose of receiving elementary or secondary education ; and house removal.

" Performance of a public duty " includes attendance at or upon any Court of Justice or at or upon any body or person exercising public duties when such attendance is in connection with the business of such Court or such public duty ; and the performance of a duty undertaken at the direction of a Court of Justice or for or in connection with the service of a Government department, or such body or person as aforesaid when such duty is duly authorised by such department, body, or person, and the performance of their duties by officers of police and fire brigades, but for the purposes of this Order does not include attendance at a place of worship.

" Red Cross purposes " means :—

(*a*) The conveyance of sick or wounded members of His Majesty's Forces for hospital or medical treatment ;

(*b*) The conveyance of stores, nurses, and duly authorised officials to and from a hospital in connection with the service of the hospital, where the journey cannot otherwise be reasonably and conveniently accomplished ;

(*c*) The conveyance of a member of a county or district committee of a hospital or of one of the societies hereinafter mentioned to a committee meeting where the journey cannot otherwise be reasonably and conveniently accomplished ;

(*d*) The conveyance of sick or wounded members of His Majesty's Forces who are otherwise unable to take exercise, from and to hospitals for a total running distance not exceeding twelve miles, when the journey is undertaken solely for that purpose ;

(*e*) The conveyance of sick or wounded members of His Majesty's Forces from and to hospitals to and from places within six miles of the hospital, where they can rest or walk about, if the Medical Officer of the hospital certifies that such drives are necessary, and if the journey is undertaken solely for that purpose ;

and extends to the said purposes if undertaken for the Red Cross Society, St. John Ambulance Association, St. Andrew's Ambulance Association, or any similar society recognised by the Admiralty, Army Council, or States acting in naval or military co-operation with His Majesty in the present war.

REGULATION OF THE USE OF PETROL, PETROL SUBSTITUTE, AND GAS.

(2) Save as is hereinafter expressly authorised, no person shall use or cause or permit to be used any petrol or petrol substitute for any purpose whatsoever, or gas for the purpose of driving any motor vehicle or motor boat.

(3) Petrol or petrol substitute, provided it has been obtained in accordance with the provisions of a motor spirit licence issued by the Petrol Control Department of the Board of Trade since June 20, 1916, and gas, if a permit has been granted for its use by the said department, may be used for the following purposes :—

Private Motor Vehicles.

A. For driving a private motor vehicle where such vehicle is used :—

(1) In the conveyance of a person or goods to or from the nearest convenient railway station or port, in connection with a journey by rail or sea, provided that the journey to or from the station or port cannot otherwise be reasonably and conveniently accomplished ;

(2) For the purpose of the profession, trade, or business carried on by, or the necessary household affairs of, the person on whose behalf the motor vehicle is being used, where the journey cannot otherwise be reasonably and conveniently accomplished ; provided that the conveyance of a person for the whole or part of the distance between his residence and place of business shall not be deemed to be a journey undertaken for the purpose of his profession, trade, or business, if railway or other means of communication be reasonably and conveniently available.

(3) In the performance of any public duty for the whole or part of a journey which cannot otherwise be reasonably and conveniently accomplished either in whole or in part ;

(4) On any sudden or urgent necessity, where life or limb is or may be endangered ;

(5) For the conveyance of a sick or injured person for the purpose of receiving medical or surgical treatment or for the removal of such person from a hospital or nursing home or from one residence to another ; and, if the journey cannot otherwise be reasonably and conveniently accomplished, for the purpose of attendance upon such person, and for visits to a person who is dangerously ill ;

(6) For funerals ;

(7) In the conveyance of a duly qualified medical practitioner or veterinary surgeon, while it is being used by him for the purposes of his profession ;

(8) For Red Cross purposes ;

Whether a journey can be reasonably and conveniently accomplished otherwise than by a private motor vehicle depends on all the circumstances of the case, including the length and purpose of the journey, the age and state of health of the person using the motor vehicle, the time occupied in relation to the distance, and the availability of trains or public service vehicles.

Trade Vehicles.

B. For driving a trade vehicle for any purpose for which such vehicles may by law be driven.

Omnibuses.

C. For driving an omnibus :—

(1) While plying for hire upon any route on which it or any other omnibus was accustomed to run during the calendar month immediately preceding the date of this Order, or upon any route which is certified by the Chief Officer of Police for the police area in which the petrol or petrol substitute is used (or in the Metropolitan Police District by the Chief Officer of the Public Carriage Branch of Metropolitan Police) to be necessary or desirable in the interests of the travelling public.

(2) For ambulance, hospital, or Red Cross purposes or for naval, military, or munitions service, or the conveyance of workmen

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to and from their work, or for the conveyance of sick and wounded members of His Majesty's Forces, although the omnibus is not plying for hire.

(3) For conveying persons, luggage, and goods to or from a railway station or port in connection with a journey by rail or sea.

Motor Cabs.

D. For driving a motor cab for any purpose within the limits of the area where it is licensed to stand or ply for hire, and to any place situate not more than three miles from the boundary of such area and for returning from such place.

Hire Cars.

E. (1) For driving a hire car, notwithstanding anything contained in a permit formerly issued under Regulation 8GG of the Defence of the Realm Regulations, where the car is hired.

(*a*) For the conveyance of a person or goods to or from the nearest convenient railway station or port in connection with a journey by rail or sea;

(*b*) For the purpose of the profession, trade, or business carried on by, or the necessary household affairs of, the person hiring the car;

(*c*) For the performance of a public duty by the person hiring the car;

(*d*) On any sudden or urgent necessity where life or limb is or may be endangered;

(*e*) For the conveyance of a sick or injured person for the purpose of receiving medical treatment, or for the removal of such person from a hospital or nursing home or from one residence to another, or for the purpose of attendance upon such person, and for visiting a person who is dangerously ill;

(*f*) For funerals;

(*g*) For Red Cross purposes.

It is hereby declared that the provisions of this clause apply to all hire cars, as hereinbefore defined, whether or not they are standing or plying for hire in a street, public place, or railway station where it is lawful for them so to do without a license.

(2) The owner of every hire car shall keep a record of all lettings, with the names and addresses of the hirers and particulars of the journey, except where the letting took place when the car was standing or plying for hire in a street, public place, or railway station, and such record shall be open for inspection at all times by a police officer or an officer of the Board of Trade.

Fire Engines and Motor Ambulance.

F. For driving a motor vehicle which is a motor fire engine, or other vehicle used for fire brigade purposes, or a motor ambulance.

MISCELLANEOUS PURPOSES.

(4) Petrol, petrol substitute, or gas may be used for the purpose of driving a motor fishing boat or other motor boats used for the purpose of the profession, trade, or business (other than the trade or business of letting motor boats for hire or for conveying passengers on pleasure trips) carried on by the person on whose behalf the motor boat is being used; or for driving a motor tractor or motor plough used for the cultivation of land or other agricultural purposes; or for driving a motor sweeping or watering machine or other vehicle used for sanitary purposes; or for purposes other than the provision of motor power to motor vehicles provided that petrol or petrol substitute, if subject to duty as motor spirit under Section 84 of the Finance (1909-10) Act, 1910, must be obtained in accordance with the provisions of a motor spirit licence issued by the Petrol Control Department of the Board of Trade.

RACE MEETINGS, GAMES, AND SPORT.

(5) Notwithstanding anything hereinbefore contained, no person shall use, or cause or permit to be used, any petrol, petrol substitute, or gas for driving any motor vehicle whatsoever, either for the purpose of his profession, trade, or business or otherwise, to or from any race meeting, game, or sport, whether for the whole or part only of the journey, except for the purpose of attendance upon or removal of a sick or injured person, or upon any sudden or urgent necessity, whereby life or limb is or may be endangered, or for the purpose of police or fire duty.

Provided that the distance between a person's place of residence, whether permanent or temporary, and the nearest convenient railway station, shall not be deemed to be a part of such journey if the use of petrol, petrol substitute, or gas for the purpose of proceeding to such railway station is otherwise permitted by this Order.

Provided also that nothing in this paragraph shall apply to an omnibus plying for hire on its ordinary and accustomed route and at its ordinary and accustomed hours and fares.

SPECIAL PERMITS.

(6) Nothing in this Order shall prevent the use of petrol, petrol substitute, or gas for any purpose by any person to whom a special permit in writing has been granted by the Petrol Control Department of the Board of Trade for such times and subject to such conditions, if any, as may be specified in the permit.

ONUS OF PROOF.

(7) The proof that petrol, petrol substitute, or gas was used in accordance with the provisions of this Order shall in all cases lie upon the person or persons using or causing or permitting the use thereof, as a condition of its user.

GENERAL.

(8) Where petrol, petrol substitute, or gas is being used by any person for a purpose permitted by this Order in the driving of any motor vehicle or motor boat, any other person or persons may accompany the person using such petrol or petrol substitute.

(9) Nothing in this Order shall prevent the use of petrol or petrol substitute obtained under a motor spirit licence, or of gas, by the holder of a gas permit, for the purpose of driving a motor vehicle for a distance not exceeding 20 miles in connection with the *bona-fide* sale or intended sale of such vehicle, provided that the seller has obtained the permission of a superintendent or other chief officer of police of the area in which the motor vehicle is kept.

(10) Nothing in this Order applies to the use of petrol, petrol substitute, or gas for the purpose of driving motor vehicles in the exclusive use of a Government department; or motor vehicles enrolled for war service under a scheme authorised by the Army Council or Secretary of State for War which are provided for the purpose of such service with petrol or petrol substitute from army sources under due authority, and while they are actually employed on the service for which they are so enrolled. A certificate issued under the authority of the Army Council or Secretary of State for War shall be evidence that the motor vehicle is enrolled under such a scheme authorised by them.

(11) Where at the date of this Order a motor vehicle or motor boat had been fitted with apparatus for the purpose of driving it by gas it may be driven for any purpose authorised by this Order without a gas permit until February 9, 1918, after which date no motor vehicle or motor boat in respect of which a gas permit has not been granted shall be driven by gas.

(12) Infringements of this Order are summary offences against the Defence of the Realm Regulations.

(13) Regulations 8G and 8GG of the Defence of the Realm Regulations shall cease to have effect as from January 10, 1918, and the Motor Spirit Restriction Order (No. 1), 1917, and the Motor Spirit Restriction Order (No. 2), 1917, are hereby revoked without prejudice to any act or thing done or suffered or to any prosecution or proceeding instituted or penalty incurred under the said Regulations or Orders.

(14) This Order may be cited as the Motor Spirit (Consolidation) and Gas Restriction Order, 1918, and shall take effect as from January 10, 1918.

ROADSIDE GAS SUPPLIES FOR MOTORS.

ENGINEERS OF LOCAL AUTHORITIES PREPARING RECOMMENDATIONS.

Following the discussion by the local authorities of the metropolitan area of the circular issued by the Commissioner of Police with reference to the provision of roadside supplies for motor vehicles, the matter was considered on November 30 by the Institution of Municipal and County Engineers at a meeting held in London, Mr. T. W. Hayward (Battersea), the president of the Association, occupied the chair.

LIVERPOOL AND BIRMINGHAM ENGINEERS.

Mr. J. A. BRODIE (Liverpool), who opened the discussion, said that Liverpool Corporation had 40 motor vehicles. They had applied gas bags to the lighter vehicles, and in this way had gained valuable experience, and he had been encouraged to arrange for the running of more vehicles on gas. He took the view that it was as well to be prepared for the future in the matter of motive power, for he realised that it was quite possible that petrol would be still more strictly reserved for army purposes. He had advised the Corporation to provide plant for compressing gas. There was excellent reason for running motors on gas; the saving effected paid for the whole outfits and plant in a very short time.

Referring to charging facilities in the streets, he said that Liverpool had not the same congestion as London, and they had arranged with the gas company to provide six or seven stations, arranged in

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MOTOR TRAFFIC.

streets which were not main traffic routes. The general arrangement had been to put up overhead pipes, which could be swung out over the footway. The trade of the country was of great importance, and everything possible should be done to help the transport traffic.

Mr. H. E. STILGOE (Birmingham) said the police would offer no objection to charging facilities provided the arrangements gave no unwarrantable congestion to the traffic. Municipal engineers could influence the choice of the sites, and be relied upon to see that they were not established in busy thoroughfares. In present circumstances, some obstruction could be dismissed, for it had come to be a matter of emergency. Their duty was to consider how they could best develop and improve the sources of motive power, and not hamper industry by unnecessary regulations and restrictions. The chief users of street charging stations would be the owners of gas vehicles. After the war the continued use of gas would depend on price and convenience. The question of electric vehicles was a different matter, because the most convenient charging places were the depots and power stations. In Birmingham gas-charging stations in the streets comprised merely standposts, with tubes, on the edges of the pavements, and a charge of 250 cubic feet could be given in five minutes. The bags had the capacity stencilled upon them. Some of the omnibuses were now equipped with bags of 700 cubic feet capacity. The bags were of the best balloon material, and cost £50 each. Canvas bags with rubber linings were not so suitable, for they chafed and the gas escaped. An omnibus carrying 35 passengers travelled one mile on 60 cubic feet. There was a future for compressed gas when suitable cylinders were available. Then wayside facilities would become fewer, for it would be possible to distribute the cylinders like cans of petrol. There was not likely to be much obstruction. Human ingenuity would not long leave them in want of a cylinder when the materials were available.

The charges for gas for motors were 1s. for 250 cubic ft., 1s. 3d. for 300, 1s. 6d. for 350, 1s. 8d. for 425, and 2s. for 500, the minimum being 1s. Electric vehicles were generally charged at night.

The Corporation electric lorries carried 2½ tons, and the average run on house refuse collection was 17·7 miles a day, the maximum being 25 miles a day. The average charge was 20 units, the maximum being 30. The consumption was one unit per mile. The vehicles took six hours to charge, but the time could be reduced by boosting, though this was not advisable. The ordinary charge for electricity was 6s. for a week—six charges of 30 units each. Over 30 units the charge was 2d. a unit. A local omnibus company was getting extremely good results from gas.

COUNTY AND RURAL DISTRICT AREAS.

Mr. H. T. CHAPMAN (Kent) remarked that it was the duty of the surveyors to assist the development and cheapening of transit and haulage facilities, subject to the proper protection of the public, and the recognition by users of the highways that there were obligations on their part to co-operate and bear their fair share of the burden imposed on the ratepayers in consequence of their operations.

At the present time the only provision of charging places, with very few exceptions, was for steam motor vehicles and locomotives. Water, in rural areas, generally speaking, was taken from streams and ponds. Much damage to roads, footpaths, culverts, and bridges was caused by vehicles standing on roads to draw water, and considerable obstruction and inconvenience were caused to other users of the highways. Under Section 72 of the Highway Act, 1835, set over first :—"Anyone who shall in any way obstruct the free passage of any highway is liable to a penalty not exceeding 40s. for each offence over and above the damage occasioned thereby."

Many County Councils had adopted by-laws prohibiting locomotives from remaining stationary on any highway so that any wheel rests on any bridge, arch, or culvert, or within 10 ft. from the face of the abutment of any bridge, arch, or culvert. The subject of gas, electricity, petrol, coal, water, etc., for motor vehicles, had to be considered from the point of view of gas that gas was being used owing to the petrol scarcity. The present containers on omnibuses generally held about 750 cubic feet of gas, and would serve for journeys of from 14 to 16 miles. They could only be a temporary expedient, and some more suitable means would eventually be devised.

In Kent, out of 600 miles of directly-maintained main roads, about 370 miles were carrying omnibus services, and in many parts of the county there were no facilities for obtaining gas except from the mains, and these did not exist on a large proportion of the mileage. The most suitable method appeared to be to lay a connection to the roadside and provide a standpipe.

Unless there was an adequate width of road the vehicles must stand on the carriage ways while filling, or could be drawn on to private property. To obviate obstruction they would frequently entail the widening of roads, and perhaps acquiring land for the purpose of providing draw-off places, which would cost more than the owners of vehicles would be prepared to pay. He was informed that to inflate the gas-bag container at gasworks took from three to five minutes. If, however, they had to be charged from an ordinary gas main through a standpipe or hose, the operation might occupy from 15 to 30 minutes. The average omnibus was 23 to 24 ft. in length, and 7 ft. to 7 ft. 6 in. in width, and if the vehicles had to be manœuvred in order to draw off the roads or up to standards, further obstruction, and perhaps danger to the public, would ensue. The height from ground level to the top of the fully inflated gas-bag container was about 15 ft. 6 in. The standards might be a source of danger and obstruction unless hinged, and capable of being swung back when out of use.

He had consulted a gas manager and the manager of a large omnibus company as to whether portable and metered standpipes could be provided, and was informed that this was impracticable.

He had been approached by some omnibus and gas managers on the subject of charging places, but up to the present none had been actually arranged for, except on private property. A steam tractor (without rubber tires) with a tank capacity of about 130 gallons, would travel 18 to 20 miles, and a heavy locomotive or steam-roller with a tank capacity of 80 gallons, eight to ten miles without refilling, so that the former might have to fill up three times a day, and the latter three or four times. In Kent they had made arrangements with various water companies, whereby water was supplied to County Council steam vehicles by metered standpipes through the companies' hydrants. In one district the road was greatly obstructed. The place was a most convenient one for the vehicles, and the County Council provided two paved draw-offs at a cost of about £250, and the Road Board contributed towards the cost. Under the Waterworks Clauses Act, 1847, the Gasworks Clauses Act, 1847, and the Electric Lighting Act, 1882, no company or authority could erect any standpipe or other fittings on highways that would cause obstruction or danger to traffic, whilst the undertakers must submit their proposals to the highway authorities before executing the works. Omnibuses plying for hire came under the category of hackney carriages, and in urban areas were subject to licence. Unfortunately this did not apply to rural areas, and was not applicable to other commercial vehicles. The Local Government (Emergency Provisions) Act, 1916, Section 20, only applied to new omnibus services, and it was contended that similar provisions should be made applicable to all omnibus services, and possibly to all commercial vehicles. Owing to the substitution of gas for petrol, the small and inadequate contribution from users of commercial vehicles was cut off. If gas became extensively used, perhaps the Government would bear that in mind.

Mr. H. T. WAKELAM (Middlesex) said there were doubts about the permanency of gas propulsion, as it had only been introduced as an emergency. It was interesting to note that companies had no power to give supplies to others than persons in their districts. It was perforce illegal for an omnibus to take supplies of gas whilst passing through company areas. Local authorities had no power to grant obstructions or encroachments, and could not charge money in respect of the user. Fittings would have to be on private lands or on "draw-offs" provided by the authorities, who would have difficulty in recouping themselves from the owners of vehicles. If the principle were to be adopted, it would have to be on the understanding that the station should be in side streets. There were quite enough obstructions by telegraph poles, tramway poles, sand bins, direction posts. The charging stations would have to be pretty close together if the scheme were to be effectual. He would be in favour of a scheme if it could be made workable, efficient, and satisfactory.

Many other speakers followed, including Mr. A. Dryland (Surrey County Council), who advocated that every possible facility ought to be provided, for municipal authorities would be the largest users of motor vehicles after the war.

In replying to the discussion, Mr. Brodie said that gas would not disappear after the war, as petrol would be scarce. He urged that experiments should be undertaken with compressed gas.

The meeting requested the Roads Committee to report upon the whole question and submit recommendations.

OMNIBUSES AND FIXED STOPS.—A newspaper statement that the Metropolitan police favour regular fixed stopping places for omnibuses is not correct. The London Omnibus Company applied to the police nearly two years ago for sanction to experiment with fixed stopping places, but were informed that statutory authority would have to be obtained, and it was thought inadvisable to make so great a change whilst the conditions were so abnormal. The fact remains, however, that fixed stops prevail at all the chief traffic points, and it is an easy matter to hail an omnibus at intermediate places.

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MOTOR TRAFFIC.

GAS TRACTION.

SPEED OF GAS COAL TRAILERS.

The Local Government Board has issued an Order relieving for the period of the war and twelve months thereafter heavy motor cars drawing a "gas container trailer" from the restriction to a speed not exceeding five miles an hour to which they would be otherwise liable. The trailer must be used solely for carrying a bag or other receptacle for gas, must not exceed a weight unladen of 15 cwt., and must have all its wheels fitted with pneumatic tires or tires made of a soft or elastic material.

The Commercial Motor Users' Association, which was instrumental in obtaining the concession permitting the use of gas container trailers, states:—"Such trailers are now legal without a sacrifice of the speeds respectively applicable to the commercial motor which draws them, provided the unladen weight of the trailer does not exceed 15 cwt., and that all its wheels are fitted with pneumatic or solid rubber tires. The containers may be of the gas-bag or any other type."

COMPARATIVE COST OF GAS AND PETROL.

At the annual meeting of the British Commercial Gas Association, Mr. F. W. Goodenough presented the following table showing the cost of coal-gas and petrol for motor fuel:—

Price of coal gas per 100 c.ft.	Equivalent cost of petrol per gallon—(a) on basis of 100 c.ft. = ·33 gallons.	(b) on basis of 100 c.ft. = ·4 gallons.
3d.	9d.	7½d.
3½d.	10½d.	8¾d.
4d.	12d.	10d.
4½d.	13½d.	11¼d.
5d.	15d.	12½d.
5½d.	16½d.	13¾d.
6d.	18d.	15d.
6½d.	19½d.	16¼d.
7d.	21d.	17½d.
7½d.	22½d.	18¾d.
8d.	24d.	20d.

LIST OF GAS CHARGING STATIONS.

The Commercial Motor Users' Association is issuing a list of over 1,000 gas charging stations throughout the United Kingdom in the form of a 32-page booklet. A copy will be posted gratis to any user on application to Mr. F. G. Bristow, secretary, Commercial Motor Users' Association, 83, Pall Mall, S.W.1.

COAL GAS PRIZE OF £1,000—AN OFFER FOR AN INVENTION.

The Executive Committee of the Automobile Association and Motor Union offer a prize of £1,000 for the best invention which will enable coal gas to be used with advantage as a propellant of motor cars and motor cycles. A sub-committee has been formed to prepare the conditions, which will be announced in due course. The sub-committee will gladly consider suggestions addressed to the Secretary, Automobile Association and Motor Union, Whitcomb Street, London, W.C.2, and marked "Coal Gas."

OMNIBUSES USING GAS.

Facilities are afforded to the Kirkcaldy omnibuses to charge containers at the current rate for the domestic use of gas.

Many of the Trent Motor Traction Company's vehicles at Derby have been fitted for gas traction. New services are being opened up in the Derby district.

Newcastle Corporation are running a number of their omnibuses on gas. Recharging is effected from standards erected at the roadside.

The 4-ton omnibuses of the Imperial Tramways Company at Stockton consume 400 cubic feet of gas on a journey of 14 miles.

Containers measuring 26 ft. by 6½ ft. are in use on the vehicles of the United Automobile Services, Limited, at Bishop Auckland.

Omnibuses used for the conveyance of the Rother Vale Colliery employees do the double journey of six miles from the Intake tramway terminus on 450 ft. of gas at a cost of 10d., each vehicle carrying 45 passengers.

Road Motors, Limited, of Luton, operate single-deck omnibuses with containers having 400 cubic ft. capacity. A journey of 26 miles is made on three charges. Gas costs 2s. 1d. per thousand cubic feet. An improved feed to the engine has since given 16 miles on one charge, which is equal to 26 cubic ft. per mile.

An average consumption of 60 cubic ft. per mile is recorded on the Birmingham omnibuses.

York Corporation are purchasing an omnibus to be run on gas.

At Edinburgh the consumption of the single-deck omnibuses, which are as heavy as the double-deck vehicles in use in London, is at the rate of 41 cubic ft. per mile. The district is very hilly.

Chesterfield Corporation have had an omnibus fitted for gas fuel.

Sheffield Corporation are running several gas-driven omnibuses.

Eastbourne Corporation omnibus department have decided to obtain cylinders in order to run a number of vehicles on compressed gas, the services being greatly handicapped by the shortage of petrol.

T.O.T. MUTUAL AID.

Christmas Gifts of Children's Clothing.

On December 19 and 20 an exhibition of gifts of clothing, received in response to an appeal to the head office staff of the London Underground Railways, as presents for the children of the employees of the T.O.T. Companies who are serving with the colours, was held in the board room at Electric Railway House, Westminster, S.W. The exhibition was an exceptionally fine one, and an excellent example of what can be attained in this direction by combined effort.

The number of gifts received totalled 650, of which 130 represented the work of Mrs. Z. E. Knapp, wife of the chairman of the

T.O.T. Visiting Committee, who takes a great interest in this part of the fund's activities. The balance represented the work of the women and girls of the clerical staff, who readily and generously responded to the call. The officers, men, and boys, appreciating the difficulty they might experience in the art of "cutting out" and "making up," kindly contributed a sum of money for the purpose of buying clothing suitable for the little boys.

Miss A. C. Smith, the originator and organiser of the "Clothing Fund," who in December, 1915, made a modest display of 50 garments, and in December, 1916, of 250, has every reason to be proud of the response to her appeal this year of over 650 as above mentioned.

At the close of the exhibition the gifts were taken over by Mr. Z. E. Knapp, chairman of the Visiting Committee of the T.O.T.

The following figures, which give in broad outline the result of the work for the fund after nearly 3½ years of war, will be of interest: The total amount spent in grants and regular allowances up to date is over £176,000; enlistments from the companies' staffs number 14,400; number of families to whom allowances and grants have been or are being made is over 9,100; total number of families now on the fund's payroll 5,250, representing 13,400 individuals; weekly expenditure in grants and allowances £1,050.

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MOTOR TRAFFIC.

MOTOR TRAFFIC NOTES.

Co-ordination of Transport.—Recommendations for the co-ordination of private traders' transport have been forwarded to the Food Controller by Croston, Chorley, Leyland, and West Lancashire District Councils.

No Petrol for V.A.D. Transport.—It was announced at Birmingham on December 27 that petrol not being available, the V.A.D. transport section would be unable to continue the work of meeting late trains and conveying home sailors and soldiers otherwise unable to proceed.

Motor Spirit and Lighting Regulations.—The Car and General Insurance Corporation (83, Pall Mall, London, S.W.1) have issued a card giving the summary of the motor spirit restrictions, Order No. 2, 1917, and the lighting regulations, which are of special interest to all motor vehicle owners.

Emission of Steam.—The City and Metropolitan police authorities have stated that they have given attention to the suggestion of the London Safety First Council that steam vehicles traversing streets of Greater London should be of such design as to prevent the emission of large quantities of steam.

Thames Estuary Omnibus Scheme.—A Bill will be introduced next session to authorise the construction of the Canvey Deep-Water Wharf and Railway, and also to enable the company to provide and operate motor omnibuses and other road vehicles for the conveyance of passengers and goods.

Suggested Modification of Motor Taxes.—The Automobile Association and Motor Union have made representations to the Treasury urging that the Inland Revenue taxes on motor vehicles should be modified for 1918, for the reason that their use will be severely restricted by limited fuel supplies.

Battery Vehicles at Grimsby.—The Electricity Committee have installed apparatus for charging electric vehicles in consequence of a business firm having brought seven such conveyances into use. The contract for the generator and switch gear was placed with Messrs. Crompton and Company, of Chelmsford.

London Omnibuses in Antwerp.—A Belgian who has recently escaped from Antwerp stated in an interview that owing to the lack of petrol, motor cars and the few London General Omnibus Company's vehicles that the Germans captured when they took Antwerp have given place to bullock carts, as there are so few horses.

Women for the Army Service Corps.—During the past year 1,000 officers and 60,000 non-commissioned officers and privates of the Army Service Corps have been passed into the fighting branches of the army. It is announced that there is still need for 1,000 women to replace men in this Corps, and that 500 are wanted as motor vehicle drivers.

Draft By-law against Overcrowding of Omnibuses.—Following the decision of Northamptonshire County Council to obtain a by-law to prevent overcrowding of omnibuses, the Corporation of Northampton have forwarded a similar by-law to the Local Government Board for approval. During the discussion on the matter it was alleged that excess passengers were carried on the top deck as well as inside.

Motor Engines for Fishing Boats.—The report of the Development Commissioners for the year ended March 31 last, states that they have recommended expenditure on certain new schemes in order to meet war conditions, particularly in connection with food supply and natural products. One advance recommended was £50,000 for improving the fish supply by installing motor engines in fishing boats in England and Wales.

British Berna Almanac.—In a year when almanacs are likely to be scarce the British Berna Motor Lorries, Ltd., have issued a very acceptable publication for 1918. It is illustrated by photographs of their commercial and industrial vehicles. A significant feature is to be seen in the dates of the various phases of the moon, and at the foot of every sheet the lighting-up times are given. The publication is sent out from the head office at Avonmore Road, West Kensington, and there are agencies at Manchester and Newcastle-on-Tyne.

Suggested Improvement for Sign Posts.—In a report presented to Southwark Borough Council, Mr. A. Harrison, borough engineer, suggests a new plan for the construction of main roads primarily for motor transport as a means of developing the resources of the country after the war. Mr. Harrison adds: "Sign posts should be prominent and numbered, and schedules of posts and towns provided. Thus, assuming that the post indicating the connection to Birmingham was 150, the driver of a vehicle would not have to worry about indication posts until he approached that number. Such a system would reduce the waste of time and transport power."

Good Record for a Daimler Van. The accompanying photograph shows a 2-ton Daimler commercial vehicle owned by Mr. Robert Steel, a wholesale milk dealer of Glasgow. He writes enthusiastically in reference to its performance. Since March 26, 1916, when the vehicle was delivered to him, it has run about

23,000 miles, and has not varied ten minutes in the course of its daily 20-mile run under contract for carrying the milk from 12 farms. Mr. Steel proudly remarks that his repair bill has been nil, and he regards as a factor in this performance the regular oiling and greasing which has been done daily in accordance with the Daimler's instruction book.

NORTHERN MOTOR USERS.

The fifth annual meeting and smoking concert of the Manchester, Liverpool and Counties Commercial Motor Users' Association was held at the Midland Hotel, Manchester, on January 7. The annual report (presented by the secretary, Mr. Ellis Green) revealed excellent progress in regard to membership, a very satisfactory financial position, and a record of activities worthy of the Northern motor users. Mr. Leo Swain (principal of Leo. Swain and Company, and manager of solid tire department of George Spencer Moulton and Company, Limited), the retiring chairman, presided, and letters of apology were read from Mr. W. Joynson-Hicks, M.P., president of the association (who explained that he recently arranged to give his services throughout the Parliamentary recess to the Air Ministry) Colonel Crompton, etc.

The Chairman remarked that the innovation of lectures had been welcomed, and he believed his successor in the chair, Mr. John Faulkner, would continue the good work on those lines. Mr. Swain thanked the officers for their assistance during the twelve months. There was no doubt that the association was well established, and that it would continue to go forward at a greater rate even than in the past.

The Vice-Chairman, Mr. J. T. Faulkner (Messrs. C. T. Faulkner and Sons, Limited), seconded, and referred to a booklet which had been issued on the aims and objects of the association, showing what the organisation had done since it had been established. The resolution was carried.

Mr. Swain moved that Mr. Faulkner be elected chairman.

Mr. R.C. Reynolds (Bleachers' Association, Limited), vice-president, seconded with great pleasure, and added a tribute to the work of the retiring chairman. Their incoming chairman was known wherever traffic was known, and the association could count itself fortunate.

Mr. Faulkner, in acknowledging the appointment, promised to do everything possible to make things run smoothly during 1918. They were all disappointed at not having their president, Mr. Joynson-Hicks, M.P., with them. A few years ago that gentleman represented one of the Manchester divisions in Parliament; for ten years he had been chairman of the A.A. and M.U., and for the last five or six years he had taken a most active part in aviation.

Mr. J. F. Kitchen (Liverpool Co-operative Society, Limited) was elected vice-chairman, and Mr. J. T. Lawton hon. treasurer. The committee were re-elected, with the addition of Mr. Chambers (Roads Improvement Association) and Mr. Wood (Union Petroleum Products Company).

Instructive addresses were given by Mr. Pratt and Mr. Dean, two of the association's solicitors.

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THE

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

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Town Hall, Matlock,
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SATURDAY, JANUARY 19, 1918.

SNOW CLEARING ORGANISATION.

EQUIPMENT and organisation for the purpose of keeping tramways clear from snow has assumed additional importance during the war, because so many tramway undertakings are transporting munition workers. Any delay in carrying them is injurious to the national interests, which require the elimination of all waste in providing for the vital needs of the Services, to say nothing of materials for shipbuilding to meet the civil and war needs of the Allies. These aspects of the matter should prove disquieting to authorities who have not obtained equipment for snow clearance, or who rest content with the primitive method of attaching a board to the front of a car, with the result that the remedy proves worse than the disease. The loss of traffic and damage to cars and equipment are serious enough in time of peace to warrant greater attention being given to the problem than it has yet received. In these columns we have often urged tramway authorities to obtain proper equipment, pointing out how quickly the cost would be recouped by the gain that would result from the maintenance of regular running in times of snowfall. There are many types of snow ploughs available, for in American practice much attention has been given to the evolution of the most efficient apparatus for fighting the snow, and we have only to turn our attention to the machines thus produced to discover some appliance that will enable our lines to be kept open even in the heaviest snowfall that this country is likely to experience. Some expenditure must of course be incurred, but the interest on the investment will be a small item in comparison with the revenue saved by avoiding stoppages. Parsimonious treatment has placed the managers of many undertakings in an unfair position, and it is to be hoped that after the experiences of the past four winters they will not fail to urge their committees or boards to permit them to obtain efficient appliances as soon as possible. This present winter, and especially the past two weeks, have demonstrated the need. Cars have frequently been snowbound in Scotland and England, communication being cut off in towns as well as on inter-urban lines. If adequate appliances are necessary in the former case, they are doubly required for the exposed routes that connect town to town. At the best of times manual labour is insufficient to deal with the severe task imposed, and with the present shortage of hands a great strain has to be encountered even in the towns. It would help the public to make more allowance for these difficulties if managers were to supply their local newspapers with information, showing how the men and inspectors have turned out at all hours of the night in order to keep the tracks clear.

LONDON "SAFETY FIRST" COUNCIL.

A meeting of the London "Safety First" Council was held on January 17, at the Guildhall, Westminster, when Mr. W. Joynson-Hicks, M.P., presided.

On the recommendation of the General Purposes Committee, it was agreed to hold the first annual meeting in February, and to submit the annual report of the Council at that meeting; to invite the affiliated authorities and organisations to re-elect delegates for the ensuing year; that, so far as possible, each member of the Council should serve on at least one Committee; also, to appoint a Schools' Propaganda Committee, to deal with "Safety First" in schools.

The Publicity Committee reported that at December 21, last, 48,000 pupils attending 311 L.C.C. and extra-Metropolitan schools had entered for the "Safety First" essay competition for school children.

The Drivers' Educational Committee advised that the widest publicity be given to the need for a safety device to be attached to the front of motor vehicles, with the object of preventing traffic accidents. Following an exhaustive test of a signalling device for motor-propelled vehicles, invented by Mr. A. H. Kelday, the Committee recommended the apparatus as a suitable and inexpensive means of giving efficient direction signals.

The Council adopted the recommendation of the Street Safety Committee, that, as the present practice of forming queues at certain places has proved advantageous, it is desirable that a scheme for its extension should be formulated, and that the police, local authorities, tramway corporations and omnibus companies operating in the Greater London area be so informed.

Sanction was given to the issue of a new poster, "Don'ts for Horse Drivers," and to the preparation of a poster dealing with dangers to employees engaged on electrified railways.

The Publicity Committee recommended, and the Council agreed to the promotion of a "Safety First" practical suggestions competition, with the object of encouraging by the award of money prizes and diplomas the general public to submit practical suggestions for the prevention of traffic accidents in the streets and on the railways, and casualties in factories, workshops, etc., in the Greater London area. First and second prizes of one guinea and half-a-guinea respectively, together with a diploma, will be awarded each month until further notice, for the best suggestions received during each month, commencing February. Suggestions must be made on the special form which can be obtained by sending a stamped addressed envelope to the Honorary Secretaries, London "Satety First" Council, 31, Westminster Broadway, S.W.1.

The proceedings terminated with votes of thanks to the Chairman (Mr. W. Joynson-Hicks, M.P.), the Vice-Chairmen (Sir E. Smith, L.C.C.), and the Mayor of Hampstead, and the honorary secretaries (Messrs. H. E. Blain, A. P. Johnson, and A. E. Cave) for their servicees during the past year, and to the Middlesex County Council for the use of its Council Chamber.

TRANSPORT, LIGHT, AND POWER SERVICES.

APPOINTMENT OF A GENERAL SERVICES COMMITTEE.

In order that the requirements of the public services, such as transport, light, heat, power, etc., may receive proper consideration, a General Services Committee has been appointed by the War Priorities Committee, under the chairmanship of Mr. J. Wormald, M.Inst.C.E., with representatives from the Ministry of Munitions, Admiralty, War Office, Board of Trade, and Local Government Board. This committee considers the requirements of these services, and formulates on their behalf demands which are taken into account by the War Priorities Committee in their allocation of the available supplies of the various commodities. The chairman is assisted by an Advisory Committee, whose duty it is to inquire into the needs of the various general industries, the maintenance of which is not vital to the supply of war mate ial or to the life of the community, but which it is desirable to preserve, if such preservation can be secured without sacrificing interests deemed essential to the successful prosecution of the war. This Advisory Committee consists of Mr. G. E. Alexander, Mr. K. Chance, Sir A. Denny, Bt., Mr. A. Walker, Mr. H. Woodall, M.Inst.C.E., and a representative of the Board of Trade.

Applications for priority certificates and permits should continue to be sent to the Priority Departments of the Admiralty and Ministry of Munitions.

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NATIONAL TRAMWAYS COMMITTEE.

A meeting of the Tramways (Board of Trade) Committee was held at the Board of Trade offices last week, when numerous matters in connection with labour and plant of various tramways were discussed. Arrangements were made which it is hoped will provide an adequate supply of drivers for tramway systems which are carrying large numbers of munition workers, but are finding it difficult to maintain their services.

Mr. J. N. Wilson, secretary and treasurer of Glasgow Corporation tramways department, has been appointed secretary of the Committee.

PROTEST BY YORK CORPORATION.

On the recommendation of their Tramways Committee the Corporation of York have passed the following resolution :—

That the Council view with great concern the appointment by the Board of Trade of a Committee with undefined powers in connection with the supply of materials and labour for tramway undertakings.

That the council consider that the committee, if it is necessary to continue it, should be constituted on the basis of securing representation of the municipal and private interests concerned proportionate to their magnitude.

That it is important that the chairman of such committee should be entirely free from any association with any traffic undertaking likely to be affected, and therefore that the appointment of an interested party as chairman is unfortunate.

That the council concur in the suggestion that an Emergency or Vigilance Committee should be established to protect municipal interests in connection with any Government action with regard to tramway undertakings.

CORRESPONDENCE.

TRAMWAYS (BOARD OF TRADE) COMMITTEE.

To the Editor of THE TRAMWAY AND RAILWAY WORLD.

DEAR SIR,—In your issue of the 4th inst., you did me the honour to publish some comments which I desired to make relative to the constitution, scope of power, etc., of the above Committee, which comments I observe have brought Mr. Alderman Linsley, Chairman of the Salford Tramways Committee, to the rescue. The Alderman states that the terms I used were incorrect and misleading, as he presided over the meeting referred to at Manchester, and he further states that invitations to the meeting were sent to the Chairmen, Deputy Chairmen, and Managers of all Municipal Tramways in Lancashire and Cheshire. In this connection, may I say, with all due respect, that the statements of Mr. Alderman Linsley are not in accordance with the facts. I did not, in any of my correspondence, raise the question as to who was invited to the sectional meeting at Manchester, or who was not. Indeed I was not in the least interested in any sectional meeting—whether it was held in Manchester or elsewhere—which only represented two counties. The question I asked, and which question I now emphasise, was, "Why were not Municipal Authorities throughout the country summoned to a meeting, and their views obtained, at the time the Board of Trade made its unfortunate suggestion as to the composition of the Committee"? If such a meeting had been held in the first instance, which obviously the importance of the occasion demanded—a fact which even Alderman Linsley cannot attempt to deny—the whole matter would have been discussed, and proper representation for Municipal Tramways secured. The representatives would then have the necessary mandate from the whole of the Tramway Authorities concerned, which is absolutely necessary to ensure the confidence of all, which confidence under present circumstances they unfortunately do not possess. I therefore suggested, even after the obvious blunder of the majority of the Council of the Municipal Tramways Association was brought to light, that, if such a meeting had been held, the matter could possibly have been adjusted to the satisfaction of all concerned. It would be interesting to know why Alderman Linsley confined his meeting to Lancashire and Cheshire. Would it not have been better if the President of the Municipal Tramways Association, as the recognised head of that Association for the time being, had called a General Meeting, instead of an individual member calling a sectional meeting, which most of the members objected to from the outset, as we know that satisfactory results can never be obtained from sectional meetings or cliques. Alderman Linsley counsels me to make myself acquainted with the facts. Allow me to assure the worthy Alderman, in all humility, that I am thoroughly conversant with all that has taken place in connection with this matter, and possibly a little more so than the Alderman gives me credit for, and I fully appreciate that a serious blunder has been committed. There is no room for mistakes of this kind when dealing with matters of such vital importance, as such mistakes could easily deprive Municipal Tramways of their birthright if the matter was allowed to proceed without opposition. The agitation has, at least, secured one additional Municipal representative in the person of Mr. Dalrymple, who can be relied upon to do his duty, but one additional representative is not sufficient, and the agitation must continue until those responsible realise that they will not be allowed to deal with other people's property just as they think fit. However, I am pleased to know that Alderman Linsley is quite satisfied with the representation on the Committee as it now stands, but I regret that many other Municipal men, like myself, cannot share his satisfaction; but, of course, men's natures differ very much, as, for instance, Mark Tapley was happy under all conditions, whilst the Israelites were sent into the wilderness as punishment for grumbling.

TRAMWAYS MANAGER.

January 14, 1918.

LONDON UNITED TRAMWAYS.

AGREEMENT FOR THE SALE OF THE HAMMERSMITH UNDERTAKING TO THE LONDON COUNTY COUNCIL.

An agreement has been completed between the London United Tramways Company and the London County Council, settling all matters of difference with reference to the purchase by the Council of the Company's tramways in Hammersmith. The Council agrees to pay to the Company the sum of £235,000 in satisfaction of all items included in the arbitrator's award of February 12, 1912, which until the signing of this agreement had been the subject of litigation. This purchase money includes the sum to be paid for the Chiswick power station and the depôt of the company. The Council further agrees to pay forthwith the sum of £12,000 toward the cost incurred by the Company in connection with the litigation. The purchase money is to be paid on or before the termination of one year after the end of the present war, but until the purchase money is paid the company will continue in possession of the tramways and to take the receipts therefrom.

After the completion of the purchase, the Council and the Company are to have reciprocal running powers over the lines of the other and the present arrangements between the Company and the railway ompanies for through bookings at Shepherd's Bush and Hammersmith are to be continued until the completion of the purchase.

A brief description of the undertaking which the Council is purchasing, with a map of the line and illustrations of the Chiswick power station, were given in THE TRAMWAY AND RAILWAY WORLD of June 14, 1917.

MISCELLANEOUS NEWS AND NOTES.

Petrograd Tramways Stopped.—The "Times" correspondent at Petrograd telegraphs that the tramways have been stopped since last Saturday, and the absence of the usual service is causing great complaint.

Omnibus Fares at Halifax.—Application has been made for the consent of the Board of Trade to an increase of the fares charged on the Halifax Tramways department's motor omnibuses. It is proposed to add a halfpenny to each stage.

Bonuses for Railwaymen M.P.'s.—To meet the extra cost of living, Mr. Hudson, M.P. for Newcastle; Mr. Thomas, M.P. for Derby; and Mr. Wardle, M.P. for Stockport, have been granted £50 per annum by the National Union of Railwaymen.

Offices of the National Tramways Committee.—We understand that the Tramways (Board of Trade) Committee has taken temporary offices at 82, Victoria Street, S.W., pending their establishment in permanent quarters at 8, Buckingham Gate, S.W.

The Whitley Report.—The Burnley Tramways Committee is considering a proposal of the local branch of the Amalgamated Association of Tramway and Vehicle Workers with a view to the formation of a joint board on the lines of the Whitley report.

Dublin Men Join in Wages Demand.—The Dublin branch of the Association of Tramway and Vehicle Workers at a meeting last Sunday morning resolved to join in the demand put forward by the Executive of the Union for an increase in wages of £1 a week.

The Liverpool War Bonus.—The Liverpool Tramways and Electric Committee have decided to recommend that the tramway employees should recive an additional war bonus of 5s. a week for men and 3s. a week for women. This will bring their remuneration up to the level of that of other tramway employees in the district.

Hartlepool Tramways and Transport Economy.—West Hartlepool Tramways Committee recently held a meeting with the local traders on the transport question with a view to saving horses and petrol in the delivery of parcels. The opinion was expressed that if the tramway parcel system was improved the traders would support it.

Halifax Corporation Workers' Demand.—The Corporation employees, who are members of the Workers' Union, have applied for an advance of £1 per week, plus 12½ per cent. bonus, above pre-war rates, with an increase of 10s. per week on pre-war rates for women. The application came before the Committee on Production on Thursday.

Refusing to Stop.—At Barrow Police Court a tramcar driver was fined 10s. for a breach of the tramway by-laws by refusing to stop to pick up an intending passenger when requested. It was stated that the would-be passenger was at a stopping place, and that there was plenty of room in the car. The Chairman mentioned that this was practically the first case of the kind that had been before the Court.

Parcel Service at Leeds.—The scheme for carrying parcels on the tramway cars, and thus to some extent relieving the transport difficulty, has been advanced a stage further. It is hoped to bring the scheme into operation in about a month's time. Tradesmen in the city have agreed to use the cars for the despatch of parcels, and arrangements are being made to establish receiving stations in the outskirts.

Threatened Strike at Blackburn.—Blackburn Corporation tramway employees, through the local branch of the Amalgamated Association of Tramway and Vehicle Workers, have made a demand for immediate payment in full of the war bonuses granted as from the first week in September last. The employees have also refused to work with non-unionists and they further object to employment being found for other than discharged sailors and soldiers, and recognition of the union is demanded. Notices of a strike to take place on February 1st, in the event of a settlement not being arrived at, have been handed in.

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Sleeper Tramways.—Birmingham Corporation has adopted the report of the Public Works Committee with reference to the proposed widening of several main arterial roads. The width proposed is 120 feet, and a separate track will be provided for tramways to be laid on sleepers. The scheme will be carried out over a period of three years. It is hoped to carry goods traffic on an extensive scale on the tramways.

Scarcity of Labour at Glasgow.—Mr. M. W. Montgomery, convener of the Glasgow Corporation Tramways Committee, replying to a question at a recent Council meeting, said that it was impossible, owing to the scarcity of labour and materials, to keep the tramway track in such good order as it was prior to the war. Before the war a staff of eight hundred men were employed on the track, but there were now only five hundred constantly employed on night and day shifts.

Compressed Gas for Omnibuses.—The Home Office and the Petroleum Executive have informed the Omnibus Committee of Eastbourne Corporation that at present there are no regulations prohibiting the use of cylinders for compressed gas. The Committee have therefore decided to fix cylinders to a number of vehicles. Bolton Gas Committee have deferred consideration of a request by the Food Control Committee that the committee should instal a gas compressor plant at the gasworks.

Difficulty of Repairs.—It appears that out of ten trackless trolley cars owned by Keighley Corporation only two are capable of service. The cause is the extraordinary difficulty in getting repairs effected. The motor, which is of Austrian manufacture, is reported to be the cause of the trouble. In Swansea there have been complaints of breakdowns of cars, and the tramway company stated that they were reducing the number of faulty cars, but they had the greatest difficulty in obtaining the labour and material necessary for repairs.

Municipal Delegations to the Western Front.—Invitations to appoint representatives to visit the front in France and Flanders are being sent to the municipal authorities by the War Office. Leeds Corporation have chosen six representatives, including Aldermen R. A. Smithson (chairman of the Tramways Committee), C. H. Wilson, A. Willey, H. Brown (vice-chairman of the Tramways Committee) and G. Ratcliffe and Councillor T. Rushton. The party left London for the Continent on Thursday, and their visit is expected to occupy five days.

Passes and Season Tickets Abolished.—On the recommendation of the Tramways Committee, West Hartlepool Council have abolished all passes and season tickets on the tramways. The privileges granted to soldiers, nurses, and workgirls and children have been referred back to the sub-Committee for reconsideration. It was stated that the military passes had been abused. Mr. Spark, acting tramways manager, informed the Council that he brought the matter before the Committee because of the impossibility of getting the girl conductors to perform their duties owing to the complication caused by passes. At present the privilege was being played up by certain sections of the public, and was being taken advantage of in various ways.

Southport and Birkdale Tramways.—Southport Corporation Tramways Committee have come to a provisional agreement with the Southport and Birkdale Tramways Company for the acquisition of that company's property. Mr. E. Clayton, chairman of the Tramways Committee, and the town clerk, Mr. J. E. Jarratt, have arranged the terms, and these will be submitted to the Tramways Committee and the Town Council for confirmation. The arrangements will also be subject to the necessary departmental sanctions. The purchase price is to be £35,000 as from January 1 of this year. The terms include the payment of £1,200 to the Corporation on revenue account, in addition to the rent outstanding at the end of last year, and the deferment of the purchase-money at the Corporation's option until July, 1922.

Restricted Service in Leeds.—Owing to difficulty in maintaining the services, the Leeds Tramways Committee have recommended certain restrictions, and it is proposed that the services on Street Lane, Longswood and West Street should be suspended for the present. The object is to release cars needed for more essential routes and to provide material for the repair of the track. New rails cannot be obtained, and it is essential to use the rails from these sections for lines on which there is a very heavy traffic. If the proposal meets with the sanction of the City Council, it is proposed by the Tramways Committee to take up a single line of rail in each section in the first place, and to use it for repairs elsewhere. The Committee have made their recommendations with great reluctance, but the repairs are so urgently needed on some parts of the line that they feel they have no alternative.

Unfounded Charge Against Tramway Manager.—In Dundee Sheriff Court on January 11, Mr. Daniel Fisher, manager and engineer of the Dundee, Broughty Ferry and District Tramways Company, was charged with having used petrol or petrol substitute for driving a motor bicycle, contrary to the Motor Spirit Restriction Order. He was also charged with failing to carry a red light at the rear of his motor bicycle. Mr. Fisher denied the first but admitted the second charge. He stated that he was using the bicycle in connection with his work of examining the section boxes on the Monifieth tramway line. There were four and a half miles of route, and the only other way he could do the work was by walking or using an ordinary bicycle. A proper examination could only be made in the early hours of the morning when the current was off. Sheriff Neish found Mr. Fisher not guilty of the first charge and dismissed him with an admonition for not having the necessary tail light.

B.E.A.M.A. Publications in Foreign Languages.—The British Electrical and Allied Manufacturers' Association have recently published two special issues of the *Beama Journal*, printed entirely in Spanish and Russian, with the object of promoting the interest of British manufactures in these countries. The publications are illustrated and contain information which makes them valuable for the purpose in view.

Children's Entertainment.—About 1,000 children of the employees of the Metropolitan Electric Tramways Company serving with His Majesty's Forces were entertained by the Tramways, Omnibuses, and Tubes Mutual Aid Association at Ponder's End on January 16. The guests were conveyed to and from their destination, free of charge, by the various tram, bus, and tube companies, the whole of the expenses being defrayed by the management.

Unfitness of Discharged Soldiers.—Councillor Raine, chairman of Hull Tramways Committee, has stated that the manager has not refused to employ any returned soldier or sailor who is suitable for the work. Unfortunately, 50 per cent. of the discharged soldiers have had to give up the work voluntarily. Councillor Raine is of opinion that the new demand for men for the Army will result in more men leaving the tramway service either for the army or for substitution, and that the alternative to women drivers will be the restriction or the closing of the tramway service. This result has been averted by the Council consenting, as recorded in our issue of January 12, to women being trained to act as drivers as and when required. With more drivers the management will be able to improve the service by the running of from 15 to 20 cars. Fifteen municipalities are now employing women as drivers.

Repairs and Spare Parts for Motor Vehicles.—The Deputy Controller of the Priority Department of the Ministry of Munitions received a deputation on January 11 from the Commercial Motor Users' Association on the question of the difficulty which is being experienced with regard to the supply of spare parts for commercial motor vehicles. The association pointed out the scarcity of transport and the degree to which the country is depending upon road transport to minimise the scarcity, and urged that all facilities that are possible in respect of expediting repairs and the issue of spare parts should be granted in order that transport work could be carried out without undue delay. The Deputy-Controller gave a sympathetic hearing to the deputation, and stated that his department recognised the importance of the matter and the necessity for affording every facility for obtaining a supply of materials for repairs, and replacements. The members of the deputation included Mr. W. Wolsey, junr. (Thos. Tilling, Ltd.), Mr. C. Le M. Gosselin (North and East Lancs. C.M.U.A.), Mr. H. Cannon (Cannon and Gaze, Ltd.), Mr. W. F. French (French's Garage and Motor Works, Ltd.), and Mr. F. G. Bristow, secretary of the association.

Heavy Snow-Fall Blocks Traffic.—The heavy snow-fall of Wednesday night and Thursday morning seriously interfered with the traffic on the London Electric Railways and the London United Tramways. The conductor rails early on Thursday morning were covered with snow, and there was much difficulty in starting the first trains. The London United Tramways' service was disorganised in the morning, and although some snow ploughs were brought into use, it was late in the day before the usual schedule could be resumed. Motor omnibus service from Bromley to Westerham Hill had to be suspended, and in numerous other districts there was great delay. Throughout the country the tramway service was more or less disorganised. The shortage of staff and the lack of snow ploughs suitable for coping with the heavy fall of snow caused the loss of a large revenue. Tramway officers and employees did everything possible to keep the service running, and many of them spent the greater part of the night in the work of clearing the tracks. At Aberdeen the snow-fall on Sunday night was the worst experienced for several years. Snow ploughs were used on the tramways from 5 o'clock onwards, and the cars were kept running. At Leeds, on Tuesday, the tramway service was delayed for a considerable time, particularly in the outlying districts, by snow. A special snow plough and cars with revolving brushes did good service, but it was some time before the last cars reached the depots.

A Result of a Collision.—Huddersfield Corporation brought an action in the local County Court against W. Hodgson and Sons, timber merchants, Dewsbury, asking for £12 9s. 6d. as damages for a tramway pole having been knocked down by a motor wagon belonging to the defendants. It was stated that the accident was caused by the steering gear of the wagon failing to act, a connecting rod having come loose owing to the nut securing it having worked off. Gibson, an employee of the plaintiffs, stated that the wagon driver told him he was going to put in a split pin in the connecting rod that morning, but it had slipped his mind. It was contended for the plaintiffs that if there had been a properly fitted split pin in the connecting rod the nut would not have come off. For the defence, the wagon driver denied Gibson's statement. It was his duty to go over the wagon every morning, and if the pin had been missing he would have noticed it. He would not have come out without the pin knowingly if the wagon was to be given to him for doing so. Mr. R. Atkinson, M.Inst.M.E., gave evidence to the effect that such accidents were not infrequent, and that split pins did come out without any obvious reason. Judge McCarthy said that Gibson would be cooler than the driver after the accident, and he regarded his version of the conversation between them as the correct one. He therefore held that negligence had been proved, though he was bound to say it was "a touch and go case." A verdict was given for plaintiffs for the full amount with costs.

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PERSONAL.

Mr. W. J. Burr, borough electrical engineer of Swansea, has been granted an increase in salary of £100 per annum.

Mr. C. W. Charlesworth has been appointed commercial secretary to the Wolverhampton Electricity Undertaking at a salary of £300 per annum.

Mr. E. H. Hollingsworth, electrical engineer, of St. Helens, has been granted an increase in salary to £600. The figure was incorrectly given in our last issue.

Mr. Neville Chamberlain, speaking at a recent meeting of the Birmingham Corporation, said that there would be an enormous development of sleeper track tramways, which were in reality light railways for carrying both passenger and goods traffic.

Sergeant W. Heaton, who before enlistment was a conductor of the Halifax Corporation tramways, has been awarded the Military Medal for gallantry in the recent November operations. Sergeant Heaton is at present in hospital in Birmingham suffering from wounds in both arms.

The Electricity Committee of Kilmarnock Corporation has recommended that Mr. W. C. Bexon should be offered a three years' engagement at a commencing salary of £550 for the first year, a present increase of £100, to rise £50 at the end of the first and second years, making his salary for the third year £650. The Town Council has not yet acted on the recommendation.

Mr. Ernest Holt, manager of Ashton-Under-Lyne Tramways, has been granted an increase of £50 to his salary. Alderman R. S. Oldham, who moved the increase, said that Mr. Holt had served the Corporation very well. He had been getting only the same salary as his predecessor, although the work was very much greater. Mr. Holt had the best interests of the undertaking at heart.

Mr. J. N. Wilson, who has occupied the position of secretary and treasurer of the Glasgow Corporation tramways since 1904, has been appointed secretary of the Tramways (Board of Trade) Committee and expects to take up his duties in London at an early date. Mr. Wilson has been in the service of the Glasgow Corporation tramways department since the Corporation took over the working of the tramways in 1894.

Mr. F. A. Hammond, an official of the Nova Scotia Tramways and Power Company, has sent home to Leeds an account of his experiences in the recent disastrous explosion of the munition ship at Halifax. Everyone in the Company's five-storied building made for the street. Mr. Hammond rendered first aid to some of the workers. The tramway cars stood in the streets deserted by their crews, who naturally thought of their own families, and went to succour them. The electricity was only interrupted for half an hour, so that both car and electric light service was available, in so far as it could be operated. Two electric cars were blown to atoms, and five of the employees were killed, including an inspector. A 4.7 gun, mounted on the steamship which blew up, was found three and a half miles away.

BUSINESS NOTES.

Prescot Fuse Boxes.—Pamphlet No. P. 149, issued by the British Insulated and Helsby Cables, Ltd., describes and illustrates the Prescot Fuse Boxes. These fuse boxes are of the non-sealing type for single cables, and are fitted with porcelain bridge fuses. They have been designed to meet the Home Office regulations, with which they comply in every respect. All live metal parts are so protected that they cannot be inadvertently touched, whether the fuses are in or out of circuit; and the design of the fuse handle and bases renders impossible the scattering of metal when the fuses operate. The list, which gives the prices of the boxes, ranging from 25 to 300 amps. capacity, can be obtained from the Company's offices at Prescot, Lancashire.

General Vehicle Company's Exports to the United Kingdom.—Cable advices show that President Wilson has agreed that every encouragement shall be given to the continued output of electric lorries both for home trade and export to the United Kingdom, The U.S.A. Aeronautical Department has purchased the rotary engine division of the Long Island City Factory of the General Vehicle Company for £500,000, but the terms of the contract expressly protect the electric vehicle departments, and every facility will be provided for their increased production if required. It is understood that the present depletion of transport in the United Kingdom largely accounted for the decision not to interfere with the General Vehicle Company's export trade.

Brake and Clutch Linings.—The use of "Don" Friction Fabrics is reported to be increasing at a rapid rate—due no doubt to their high standard of excellence and quality. The demand comes from some of the largest users of brake and clutch linings in the United Kingdom, amongst others the London General Omnibus Company. In view of the business already being done, and of the great developments anticipated by Messrs. Hays, Hunter and Standen, Ltd. (who market "Don," and who already have large orders in hand and pending for the Indian, South African and Colonial markets), it has been found necessary during the past year to more than double the number of looms used for manufacturing the "Don" Friction Fabrics. The fabrics are woven from 100 per cent. pure asbestos yarn, with or without the addition of brass wire. After the weaving "Don" fabric is treated by special methods of impregnation, which render it impervious to the effects of frictional or other heat, and prevent its braking properties being affected by contact with grease, oil and water.

Austin Cars in the Tank Race.—Perhaps the most exciting incident witnessed during the Tank's last day in Birmingham was the appearance of a fleet of Austin armoured cars, which had been driven from Longbridge Works, Northfield, their birthplace, to Victoria Square, headed by the Austin band and guarded by Austin volunteers. Each of the cars bore appropriate inscriptions and reminders, the first informing the immense crowds that it was the "Austin Tank Cheque." Another stated, "This is the workers' efforts," and the last one bore the prophetic assurance, justified later in the day, "Tank race; Birmingham first." The Austin cheque, which was for £96,875, in payment of 125,000 War Savings Certificates taken up by the employees, was handed to the Lord Mayor on the top of the Tank.

FINANCIAL REPORTS AND MEETINGS.

San Paulo Tramways, Light and Power Company.—A dividend has been declared at the rate of 2½ per cent. on the issued common stock.

Yorkshire Electric Power Bill.—Barnsley Corporation have decided to join other county boroughs in opposing the Yorkshire Electric Power Bill, on the ground that it is likely to prejudice county boroughs in case of extension.

General Electric Company.—In addition to the half-yearly dividend of 6s. per share paid on the preference shares, less income tax at 5s., on December 31, an additional distribution has been made of 3s. per share, free of income tax. This represents the income tax deducted in 1916 and June, 1917.

L.C.C Traffic Receipts.—The traffic receipts for the week ended January 16 amounted to £52,556, an increase of £7,554, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to January 16 (forty-one and a half weeks) the total receipts were £2,294,989, an increase of £306,690, on the corresponding period of 1917.

Liverpool Overhead Railway Company.—The directors of this company have resolved to recommend the payment of a final dividend (for the half-year ended December 31, last)., at the rate of five per cent. per annum (less income tax) on the preference shares, and at the rate of four per cent. per annum (less income tax), on the ordinary shares. This will make the dividend for the year 5 per cent. on the preference and 3½ per cent. on the ordinary shares.

Lancaster and District Tramways Company.—At the annual meeting on the 29th ult., Mr. A. Bell, chairman of the directors, who presided, referred to the difficult and anxious times through which the country was passing. The result of the year's work he thought very satisfactory in the circumstances, as there was a net profit of £575, which they had allocated to the reduction of the debit of the net revenue account. Horse traction was very costly at present, owing to the high price of provender, and they had reduced the service to a minimum in order to hold their parliamentary rights. During the year they had lost through resignation the services of their late manager, Mr. Firth, who had been connected with the company for a quarter of a century. As a token of appreciation the directors had presented him with a gold watch suitably inscribed.

Electric Tramcar Handbook
FOR
MOTORMEN, INSPECTORS,
AND DEPOT WORKERS.
By W. A. AGNEW.
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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash Jan. 17 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	60½	60½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4½	55/-	53/9
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4½	49/9	48/9
4%	4%	Do. 4% Deb.	100	91	68½	68½
4½%	4½%	Do. 4½% Deb.	100	98½	68	68
5%	5%	Do. 5% Deb.	100	96	66½	66½
—	—	Associated Omnibus Co., Ord. ..	5/-	⅜	1/3	1/3
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1⅛	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	90½	90½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	101½	100
—	1/-	Bath Electric Trams Pref. Ord.	1	½	4/-	4/-
6d.	6d.	Do. 5% Cum. Pref. ..	1	⅜	11/-	11/-
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	70	71½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	20½	20½
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11½	9½	9½
4½%	4½%	Do. 4½% Deb.	100	96	77	77
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	47	46½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	88½	89
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	£5/0/0	£6/15/0
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	77/6	82/6
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	90½	92
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	29½	29½
6%	5%	Do. Pref. Ord.	100	106	29	28½
5%	5%	Do. 5% Cum. Pref. ..	100	103	45	42½
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	82½	82½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	58	56½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	31½	31½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	73	72½
5%	5%	Do. 5% Deb.	100	92	76½	77½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65	65
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	72½	72½
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6⅛	6⅛
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	81/3	81/3
4½%	4½%	Do. 4½% 1st Deb.	100	99½	72½	74
1/-*	1/-*	Cape Elec. Trams.	1	1⅛	12/3	12/3
1/3	1/3	City of B. A. Trams	5	5½	82/6	82/6
4%	4%	Do. 4% Deb.	100	97½	70	70
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	85	85
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	79½	79½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
4/-	4/-	Dublin United Trams. Ord. ..	10	8	7½	7½
6/-	6/-	Do. 6% Pref.	10	12	10⅞	10⅞
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	⅛	-/9	-/9
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1	1/16	9/3	9/3
4½%	4½%	Do. 4½% Deb.	100	67½	53	50½
1/1½	5½d.	Hong Kong Tramway	5/-	⅝	17/1½	17/1½
5%	5%	Do. 5% Deb.	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	½	2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co.	10	10½	9½	9½
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	71
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79½
9¾d.*	9¾d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	⅛	2/3½	2/3½
6d.	6d.	Do. 5% Pref.	1	⅛	7/-	7/-
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	62½	62½
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	79½	79½
5%	5%	Do. 5% Inc. Deb... ..	100	88½	79	79½
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	37	37
3/-	3/-	Madras Elec. 6% Pref. ..	5	5½	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	87½	87½
7½d.%*	9½d.*	Manaos Trams & Ltg. Ord. ..	1	⅛	3/11	3/11
5%	5%	Do. 5% 1st Deb.	100	77	71	71
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	72½	71
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70	70
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	30½	31
4%	5%	Do. 1 Mt. 5% G.B. ..	—	84	36	32
—	—	Do. 6% Mt. Bds. ..	100	76	25½	25½
4½%	4½%	Montreal St. 4½% Stg. Dbs. ..	100	100	91½	91½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	90	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	⅛	17/-	18/6
9¾d.*	9¾d.*	New General Traction	1	½	7/3	7/3
8½d.	6d.	Northern Gen. Trans. Ord. ..	1	⅛	12/9½	12/9½
6/-*	3/-	Para Elec. Rlys. Ord.	5	4½	79/4½	75/-
5%	5%	Do. 5% 1st Deb. ..	100	80½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	6/7½	6/7½
—	—	Do. 7% Non. Cm. Part Pf.	1	—	12/6	12/9
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1	⅛	6/7½	6/7½
6d.	6d.	Do. 5% Pref.	1	⅛	12/1½	12/1½
8d.	1/4	Provincial Trams. Ord. ..	1	½	20/3	20/3
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	88/9	88/9
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	81	81
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	87½	86½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	75½	76½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86½	87½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	75	75
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/7	4/7
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	88	88
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	91½	91½
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77½	77½
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	31/3	31/3
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	66	66
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	½	18/4½	18/3
3/-	3/-	Do. 6% Cum. Pref. ..	5	½	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	76½	76½
—	—	Metropolitan Dist. Ord. ..	100	21½	15½	15½
—	—	Undgd. Elec. Rys. of London ..	10	21½	34/9	33/9
		Do. "A"	1/-	½	5/0½	5/4½
4½%	4½%	Do. 4½% Bds. of 1933 Rd. ..	—	99	100½	101½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	102½	101½
%	4%	Do. 6% In. Bonds Rd. ..	—	88½	82	82

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1916-17	Latest Return. 1917-18	Latest Return. Incr. or Dec.	Aggregate. Wks.	Aggregate. 1917-18	Aggregate. Incr. or Dec.
Aberdare U.D.C. ..	Jan. 8	378	440	+ 62	40	18,064	+ 1,737
Aberdeen Corporation ..	„ 9	1,835	2,182	+ 347	32	60,581	+ 7,860
Ayr Corporation ..	„ 12	257	221	+ 63	35	16,916	+ 2,040
Belfast City	„ 11	5,528	6,926	+ 1,398	41	268,720	+ 34,079
Birkenhead Corporation	„ 13	1,483	1,766	+ 283	41½	75,697	+ 11,914
Birmingham Corporation	„ 5	16,447	19,937	+ 3,490	40	739,657	+ 102,171
do. Motor Omnibuses ..	„ 5	958	1,180	+ 222	40	42,530	+ 2,706
Blackburn Corporation ..	„ 9	1,096	1,224	+ 128	41½	61,692	+ 10,065
Blackpool & Fleetwood ..	Dec. 31	445	716	+ 271	51⅛	44,164	+ 1,148
Bournemouth Corporation	Jan. 16	1,834	2,198	+ 364	41½	106,362	+ 10,182
Bradford Corporation ..	„ 12	6,466	7,086	+ 620	41	315,703	+ 35,338
Burnley Corporation ..	„ 12	1,624	1,790	+ 166	..	..	..
Burton-on-Trent Cor. ..	„ 13	280	344	+ 64	41	12,021	+ 1,501
Bury Corporation ..	„ 13	1,280	1,357	+ 77	41½	67,743	+ 8,743
Chatham & District ..	„ 3	652	452	— 200	¾	452	— 200
Cork Electric	Dec 31	723	908	+ 185	52	28,968	+ 2,283
Derby Corporation ..	Jan. 12	1,006	1,114	+ 108	41	49,991	+ 3,436
Dublin United	„ 11	6,169	6,824	+ 655	2	11,006	+ 963
Dundee City	„ 9	1,309	1,595	+ 286	34½	53,444	+ 5,457
East Ham Corporation ..	„ 12	1,191	1,228	+ 37	41	56,484	+ 3,429
Exeter Corporation ..	„ 11	362	336	— 26	41	16,475	— 202
Glasgow Corporation ..	„ 12	22,963	24,874	+ 1,911	32¾	859,863	+ 99,326
Glossop (U.E. Sup. Co.) ..	„ 12	139	169	+ 30	2	353	+ 76
Halifax Corporation ..	„ 8	1,959	2,092	+ 133	40¾	100,113	+ 9,765
do. Motor Buses ..	„ 8	48	47	— 1	40¾	1,999	— 20
Hastings and District ..	„ 14	942	836	— 106	2	1,757	— 239
Huddersfield Corporation	„ 12	2,626	2,893	+ 267	41	131,309	+ 14,782
Ilford U.D. Council ..	„ 12	576	705	+ 129	41	31,327	+ 3,574
Ipswich Corporation ..	„ 12	385	552	+ 167	41	27,657	+ 6,589
Isle of Thanet	„ 12	216	164	— 52	15	2,453	— 1,488
Kilmarnock Corporation	„ 12	156	202	+ 46	34½	7,073	+ 904
Lanarkshire	„ 10	2,259	2,839	+ 580	2	4,986	+ 560
Lancashire United ..	„ 9	1,732	2,212	+ 480	2	3,131	+ 605
Leeds City	„ 12	9,308	10,208	+ 900	41	453,610	+ 50,118
Leicester Corporation ..	„ 12	3,259	3,966	+ 707	..	..	..
Leyton U.D. Council ..	„ 10	1,471	1,639	+ 168	41	76,805	+ 10,639
Liverpool Corporation ..	„ 5	14,964	16,291	+ 1,327	52½	818,068	+ 80,532
Llandudno & Colwyn Bay ..	„ 4	218	242	+ 24	5	1,171	+ 132
London County Council ..	„ 16	45,002	52,556	+ 7,554	41½	2,294,989	+ 306,690
Maidstone Corporation ..	„ 10	196	242	+ 46	41	10,076	+ 1,064
Manchester Corporation ..	„ 12	18,195	21,664	+ 3,469	41	856,508	+ 86,571
Nelson Corporation	„ 5	205	228	+ 23	40	9,455	+ 877
Newcastle-on-Tyne Cor. ..	„ 12	6,546	7,371	+ 825	41	323,126	+ 47,268
New St. Helens & Dist. ..	„ 9	986	1,111	+ 125	28	39,777	+ 9,213
Northampton Cor.	„ 11	721	812	+ 91	41	34,570	+ 4,845
Nottingham Corporation ..	„ 10	3,774	4,489	+ 715	41	182,428	+ 22,107
Oldham Corporation ..	„ 13	2,198	2,544	+ 346	42	118,472	+ 15,644
Portsmouth Corporation ..	„ 12	2,141	2,421	+ 280	..	..	..
Provincial	„ 12	1,932	2,238	+ 306	14⅞	34,529	+ 4,506
Reading Corporation ..	„ 10	841	1,043	+ 202	41	43,365	+ 8,025
Rhondda Tramways ..	„ 3	558	639	+ 80	¾	639	+ 80
Rotherham Corporation	„ 16	1,573	1,794	+ 221	41½	75,603	+ 10,582
Salford Corporation ..	„ 14	5,209	6,105	+ 896	41⅝	273,240	+ 48,951
Sheffield Corporation ..	„ 13	10,445	11,946	+ 1,501	42	507,449	+ 63,178
Southampton Cor.	„ 9	1,606	2,043	+ 436	40⅝	83,905	+ 15,259
Southend-on-Sea Cor. ..	„ 9	623	534	— 89	41	36,932	— 1,124
South Shields Cor.	„ 12	810	962	+ 152	41	39,393	+ 4,689
Sunderland Corporation. ..	„ 13	1,571	1,770	+ 199	41	75,856	+ 7,408
Sunderland District	„ 10	762	726	— 36	10	4,382	+ 806
Swindon Corporation ..	„ 9	195	262	+ 67	40¼	11,083	+ 2,632
Torquay Tramways	„ 3	257	297	+ 40	¾	297	+ 40
Tyneside Trys. & Trmrds	„ 2	628	892	+ 264	¾	269	— 11
Wallasey Corporation ..	„ 12	1,203	1,368	+ 165	41⅜	64,874	+ 8,293
Walsall Corporation	„ 12	727	983	+ 256	41	40,838	+ 6,645
Walthamstow U.D. Coun. ..	„ 12	929	1,042	+ 113	41	50,347	+ 5,674
Warrington Corporation	Dec. 30	485	702	+ 217	38	21,582	+ 2,647
West Ham Corporation	Jan. 10	2,977	3,300	+ 322	40½	149,275	+ 17,867
Wigan Corporation ..	„ 10	1,634	2,010	+ 376	40	83,013	+ 13,490
Yorkshire (West Riding)	„ 13	1,741	2,094	+ 353	2	4,382	+ 806

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	Latest Return. 1917-18	Aggregate. Wks.	Aggregate. 1917-18	Increase or Dec.
Anglo-Argentine	Jan. 14	£51,246	£54,406	2	£107,414	+ £4,239
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Nov.	3,430	3,552	32	25,665	+ 125
Brazilian Traction (Mlrs.)	Nov.	7,160,000	7,695,000	47	84,131,000	+ 6,558,000
Brisbane	Dec.	32,910	35,019	52	396,339	+ 6,269
British Columbia .. $	Nov.	472,767	525,629	21	2,368,105	+ 199,679
Buenos Aires Lacroze ..	Dec.	40,108	40,901	26	230,476	— 410
Burmah Tram. & Light Rs.	Nov.	26,824	27,761	17	109,595	+ 4,844
Calcutta .. .. Rs.	Jan. 5	54,710	57,172	⅛	57,172	+ 2,462
Cape Town	Dec.	..	19,803	..	..	..
Carthagena and Herrerias	Dec.	2,390	4,424	52	49,566	+ 19,776
Cordoba	Nov.	12,836	13,339	30	108,715	— 2,137
East India	Dec.	2,120	1,099	22	6,273	— 4,914
Hong Kong .. .. $	Nov. 17	12,363	12,308	46	622,320	— 243
Kalgoorlie	Aug.	3,021	2,911	34	21,065	+ 586
La Plata	Dec.	4,437	4,606	52	48,963	— 1,874
Lima	Nov.	33,608	37,466	47	307,198	+ 26,199
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras	Dec. 31	40,770	46,646	52	847,320	+ 79,442
Manila .. .. $	June	59,432	73,900	..	..	..
Manaos .. .. Rs.	Sept.	141,286	157,761	..	..	..
Montevideo	Dec.	31,364	34,025	8	65,085	+ 5,817
Pernambuco	Jan. 13	3,655	4,651	2	9,370	+ 2,165
Peruvian .. .. $	Dec.	990,842	1,101,090	26	6,088,270	+ 582,778
Port Elizabeth	Dec.	..	4,920	..	..	..
Rangoon	Dec.	4,904	5,438	52	66,817	+ 2,509
Shanghai .. .. $	Oct. 3	24,053	28,458	..	..	..
Singapore .. .. $	Nov. 10	12,814	12,797	45	580,690	+ 12,216
Toronto .. .. $	Nov.	911,829	1,052,000	47	10,966,998	+ 1,161,954
Winnipeg .. .. $	Nov.	282,899	305,881	47	3,039,387	+ 16,227

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CONTRACTS AND ORDERS.

The British Westinghouse Company have an order from Hull Corporation for extra high tension switch gear at £1,284.

Walsall Town Council has renewed its contract with Callender's Cable and Construction Company, Ltd., for rubber covered cables.

Dennis Bros., Ltd., of Guildford, have received an order to supply a second 65 h.-p. motor fire engine with escape to Luton Council at £1,100.

A 5-Ton Foden Steam Wagon was recently obtained by the Eastern Highways Committee of Norfolk County Council, in consequence of the increasing difficulty of hiring steam labour. The county surveyor has reported that the steam vehicle had proved both expeditious and economical, and the Committee have therefore agreed to obtain another steam tractor and two trailers when an opportunity arises. The report of the county surveyor has also induced the Western Highways Committee to appoint a sub-committee to consider the question of adopting mechanical haulage.

WANTED.—Copies of the TRAMWAY AND RAILWAY WORLD of January 1 and 13, 1916; March 9, 1916; April 13, 1916; May 11, 1916; June 8, 1916; October 9, 1916; August 16, 1917; and October 18, 1917.—Reply to Box 12, The TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

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DEPRECIATION & WASTING ASSETS

AND THEIR TREATMENT IN COMPUTING ANNUAL PROFIT AND LOSS

By P. D. LEAKE,

Fellow of the Institute of Chartered Accountants in England and Wales; Fellow of the Institute of Directors; Fellow of the Royal Statistical Society.

Particular attention is directed to a chapter on Depreciation and Controlled Establishments under the Munitions of War Act, 1915; and it may be added that the views of the Ministry of Munitions as to the proper treatment of Depreciation of Plant coincide with the views advocated in this work.

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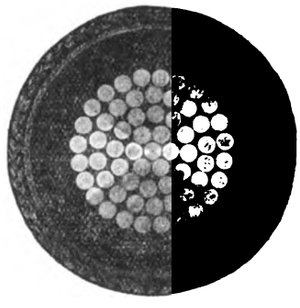
1837.  1918.

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By R. BICKERSTAFFE HOLT,
Highways and Permanent Way Engineer, City of Leeds.

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THE

Tramway & Railway World

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."

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WEEKLY LIST OF TENDERS INVITED.

COUNTY BOROUGH OF OLDHAM.

Supply of Mackintoshes.

The Tramways Committee invite Tenders for the supply of 150 mackintoshes suitable for inspectors and motormen.

Tenders to be addressed to the Chairman of the Tramways Committee, Wallshaw Depôt, Oldham, and endorsed "Tender for Mackintoshes," must be delivered, together with samples, not later than 10 a.m., Wednesday, February 6th, 1918.

The Committee do not bind themselves to accept the lowest or any tender.

J. H. HALLSWORTH,
Town Clerk.

Town Hall, Oldham.
January 23, 1918.

CITY OF COVENTRY.

Tramways Department.

The Tramways Committee invite tenders for renting the Advertising Rights upon the tramcars, for a period of 5 years from April 1, 1918.

Copies of the conditions, specification and form of tender can be obtained on payment of 10s. 6d. (returnable upon receipt of a bona-fide tender) from Mr. T. R. Whitehead, General Manager and Engineer of the Tramways, Priestley's Bridge Depot, Coventry.

Tenders, endorsed "Tender for Advertising Rights," must be delivered at my Office, the Council House, Coventry, not later than 10.0 a.m. on Monday, February 11, 1918.

The Committee do not pledge themselves to accept the highest or any tender.

The Council House,
Coventry,
January 22, 1918.

GEORGE SUTTON,
Town Clerk.

FEATHERSTONE URBAN DISTRICT COUNCIL.

The above Council invite Tenders for the Supply and Delivery of a Three-ton End-Tipping Steam Motor Wagon (subject to the Council obtaining a certificate from the appropriate Government Department entitling them to delivery of the same).

Sealed Tenders, together with detailed Specification, endorsed "Tender for Motor Wagon," must be received by the undersigned on or before the 11th February, 1918.

The Council do not bind themselves to accept the lowest or any Tender.

J. A. HAIGH,
Clerk to the Council.

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January 21, 1918.

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Tramways Department.

Appointment of Works Superintendent.

The Tramways Committee are desirous of receiving applications from fully qualified Mechanical and Electrical Engineers for the position of Workshop Superintendent at their Kyotts Lake Road Works.

Candidates must have had good experience in workshop practice.

The commencing salary will be £400 per annum, rising to £500 on approved service.

If less than 45 years of age, the successful candidate will be required to contribute to the Birmingham Superannuation Scheme.

Applications, with copies of not more than three testimonials, must reach the undersigned not later than 5th day of February, 1918.

ALFRED BAKER,
General Manager.

Tramways Department,
Council House, Birmingham.
January 15, 1918.

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R. C. BULLOUGH,
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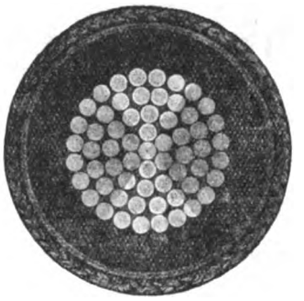
1837.  1918.

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SATURDAY, JANUARY 26, 1918.

HIGHER FARES INEVITABLE.

The continually increasing demands of labour are placing British tramways in a position of unprecedented difficulty. When the first war bonuses were granted no one conceived of the extent to which they would have to be enlarged; increase has been added to increase until the aggregate has already severely strained the financial position of some even of our moderately successful tramways. The more important undertakings, with their more ample margins between revenue and expenditure, are also finding their position threatened and, while in some cases efforts have been wisely made to redress the balance by increases in fares, it cannot be denied that such increases have by any means met the needs of the case. Yet all undertakings, whether great or small, are now faced with the probability that a fresh demand from the employees will have to be met. The grant of 12½ per cent. to munition workers has had its natural effect, and tramway workers, among others, look for a similar increment in their pay. That many tramways are not in a financial position to grant further concessions will not prevent the men or the women from pressing their demands; and little help need be expected from Government. Tramway owners, whether companies or municipalities, will have to help themselves; and there is only one way in which they can do this. They must pass on the burden to the travelling public. This course is unpleasant, but it is unavoidable. In some cases it has been taken with such reluctance as to prevent the remedy from being more than a temporary compromise. In no other class of public utilities has there been on the whole such great hesitation in adjusting the requirements imposed by the increased cost of labour and the enhanced prices of materials. True to their traditions, tramway managers endeavoured to look for every possible economy; and even before the lack of materials prevented proper maintenance, they cut down to an economically dangerous extent the cost of upkeep and renewal rather than deprive the public of the advantages of the, in many cases, too low fares that they had long enjoyed. Subsidised workmen's fares, unremunerative children's fares, free riding to privileged persons, not to mention dogs, were still permitted to continue long after the war began to place on tramways its crushing burden of increased costs. Considering that tramways are commercial undertakings, and like other enterprises of that class are unable to continue to work at a loss, the present position is absurd, and will have to be altered. No one is responsible for the greater cost of working, and nothing can be done to reduce it; it will probably continue for some time to increase. Consequently, tramway riding must become more costly to the public. Some riders, who have been accustomed to ride short distances, will probably find it necessary to abandon the habit, for an increase in short-distance fares is generally inevitable, or, what comes to the same thing, the journey permitted for the minimum fare must be greatly reduced. Unremunerative fares of whatever class must be readjusted. There may, of course, be a few fortunate undertakings that may escape the necessity of alteration in their fares, but that there are such undertakings must not blind those in charge of others to the facts of the case. It would be well to bear in mind that railway fares have been raised 50 per cent. Tramway directors and committee men who stand aghast at the mild proposals made by their managers in order to re-establish the ratio of receipts to expenses on a practical basis, may with advantage study the facts of the railway position a little more closely than they have done. Railway costs have certainly not increased at a greater ratio than tramway costs, and if 50 per cent. is justifiable in the case of the former, the latter are entitled to much more than the modest increments so far imposed. The Board of Trade should have power to sanction necessary increases in tramway fares, and a strong and united effort on the part of the tramway associations to obtain authority for the requisite changes should be made without delay.

L.C.C. TRAMWAY MATTERS.

THE VICTORIA TERMINUS DIFFICULTY.

The London County Council resumed its fortnightly meetings after the Christmas recess, on Tuesday, when a long report was presented by the Highways Committee on the conditions of traffic at Victoria tramway terminus. The growth of traffic, particularly during the past six months, has led to great difficulties in operation and much inconvenience to the public. The Committee now advise that further steps must be taken to improve the service. They recommend an appropriation of £800 for the construction of an additional crossover, which would enable the number of cars that could be simultaneously loaded to be increased from four to six. Six services from various parts of South London converge at this terminus. The maximum number of cars departing from the terminus during the busiest hours of the day is about eighty an hour, and the number of passengers is greater than at any other dead-end terminus in London. There is also a very large incoming traffic. A large staff is maintained to facilitate the movement of the cars and to prevent accidents, but it is impossible to control the crowds desiring to board the cars during the busiest hours. To meet the requirements the number of cars running to Victoria must be increased. The abolition of the dead-end at Victoria was included in the proposals made by the Highways Committee on November 10, 1914. These proposals formed part of a comprehensive policy aiming at a complete consolidation of the existing tramway system in London. The proposal was not, however, proceeded with owing to the altered circumstances resulting from the outbreak of war. The abolition of the dead-end would be the only effectual remedy for the congestion, and the Committee are satisfied that the construction of a line *via* Wilton Road, forming a loop connecting with the existing tramway in Vauxhall Bridge Road, would furnish the best solution. This proposal has been submitted to the Commissioner of Police of the Metropolis, and the Ministry of Munitions has assisted in the effort to obtain approval to the proposal, but the Commissioner of Police has refused his consent. The Westminster City Council, as the road authority, has also declined its consent, and the Ministry of Munitions, in view of the objection of the Commissioner of Police, feels that it cannot press the matter further. The Commissioner

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of Police in his letter stated that the vehicular and pedestrian traffic here is enormous, and he fears that the proposed loop line would inevitably obstruct all traffic through Victoria Street proceeding westward. The Committee are convinced that the objections are outweighed by the advantage which the construction of the loop would confer on the public. In view of the attitude of the police and the road authorities, the general manager has advised that the installation of an additional crossover would partly meet the difficulties, and as a matter of urgency the work was put in hand during the recess.

BONUS ON EARNINGS.

A decision by Sir George Askwith, the Chief Industrial Commissioner, on January 7, provided that men working on time rates in generating stations and sub-stations and on mains, including men on the technical staff, are to receive a bonus of 12½ per cent. on earnings as from October 13, 1917, and the Council agreed that the decision should be applied to the grades concerned in the electrical branch of the tramways department. The cost is estimated at £4,025 for the current financial year, and £9,125 for 1918–19. The Highways Committee pointed out that the decision was one of the consequences of the recent issue by the Minister of Munitions of orders granting a bonus of 12½ per cent. on earnings to certain classes of persons employed, at time rates, on or in connection with munitions works.

The order of October 13, 1917, with regard to skilled engineers and moulders was considered to apply to the tramways undertaking, as it is certified under the Munitions of War Amendment Act. On December 11, 1917, he issued a further order which, in effect, extended the 12½ per cent. bonus to all workmen—being plain time workers—engaged on munition works in engineering shops, boiler shops or foundries specified in the schedule to the order; and as none of the Council's establishments is included in the schedule, this order has no immediate application to the staff under their direction. Persons employed in connection with the production and distribution of electrical energy were not within the benefits of the order of October 13, 1917, above referred to; and, in effect, the benefits are extended to them by Sir George Askwith's decision.

Until the issue of the order of October 13, 1917, by the Minister of Munitions, there was ground for believing that questions of remuneration were being satisfactorily adjusted, as occasion arose, through the Committee on Production or other customary channels. With regard to employees in the tramways department, the conciliation boards have remained in full work, with procedure modified so that decisions may be reopened not less frequently than in the case of decisions of the Committee on Production. The 12½ per cent. addition to earnings, under the orders of the Minister of Munitions, accrued to classes of employees most of whom were in receipt of war wages or war bonus of recent grant, susceptible of review at short intervals and determined, presumably, with some regard to economic and other considerations having a general bearing on industry under present abnormal conditions. The fortuitous addition of 12½ per cent. to the earnings (which include, of course, war wages of quite recent settlement) of particular classes of employees has led, under the conditions now prevailing, to grave unrest amongst other classes of employees, and places employers, anxious to deal fairly with all classes of their employees, in a position of extreme difficulty.

The various reports were adopted.

THE NATIONAL TRAMWAYS COMMITTEE.

Mr. G. Hume (Chairman of the Highways Committee), replying to Mr. J. P. Gilbert, said he was not in a position to make a statement as to action taken by the Tramways Committee of the Board of Trade, but he pointed out that so far no part of the Council's tramway (lines, cars or other necessary materials) had been taken over by the Committee, nor had any material from other tramway undertakings been transferred to the Council's tramways.

SNOW AND THE USE OF SALT.

Mr. Hume, replying further to Mr. Gilbert, said that some time ago arrangements were made with the Borough Councils of Bermondsey, Deptford, and Greenwich whereby salt in the event of snow should not be used on the tramway tracks between London Bridge and Greenwich Church. During the recent snowstorm this arrangement was adhered to with most satisfactory results. It was proposed to inform the various Borough Councils of these results. The Borough of Deptford, as also some other boroughs, did not apply salt to any of the thoroughfares in which there were tramways. It was the general practice of the tramways department to clear the tramway tracks of snow.

OFFICIAL AND PRIVATE WORK.

On Thursday, January 17, in the House of Commons, Mr. Peto asked the First Lord of the Admiralty whether Mr. C. H. Wordingham, the superintending electrical engineer under the Admiralty, had recently been engaged in a private capacity as consulting engineer in advising the Corporation of Leicester on a proposed extension of their electricity undertaking; and whether he would see that in future such private work was left to engineers who were not in receipt of official salaries.

The Parliamentary Secretary to the Admiralty (Dr. Macnamara) in reply said that he was advised that whole-time service for officials meant service within the hours of work prescribed by the Order in Council of January 10, 1910, together with any additional attendance that might be required by exigencies of His Majesty's Service, and did not necessarily exclude Civil servants from other activities not involving interference with their official duties. In order to safeguard the public interest, the Order in Council referred to prohibited Civil servants from undertaking outside duties necessitating attendance during official working hours, whilst the Admiralty rules required the consent of the Board to be obtained. In this case he found the rule was not formally carried out—before any invitation is accepted to act in an expert or advisory capacity in connection with any corporation, company, or private undertaking. Without expressing an opinion on the personal case referred to, the First Lord of the Admiralty desired to endorse the view that during the war such consent should be restricted to most exceptional cases, and he could assure his hon. friend that this principle would be acted upon in future.

MISCELLANEOUS NEWS AND NOTES.

Increased Wages at Newport.—The Tramways Committee have granted advances in wages, bringing those of drivers up to 48s. a week, conductors 30s.

Leipsic Tramways.—The number of tramway cars fit for service, the *Times* reports, has fallen from 700 before the war to 105. Recent snowstorms put 58 vehicles out of service, and neither labour nor material is available for their repair.

New Power Station for Belfast.—At a meeting of Belfast Tramways Committee the town solicitor submitted letters received from the Board of Trade giving their consent to the application of the Corporation for permission to erect an electrical generating station on the Hamilton Road site.

Inland Transport.—The *Times* states that the question of the control of all forms of inland transport except the railways, which will be controlled as heretofore by the Railway Executive, is engaging the immediate attention of the Government. Important developments may be expected shortly.

Discontinuance of Route at Halifax.—The tramway service on the Warley Road circular route is to be discontinued as from January 14. The proposal is giving rise to much complaint, but the Tramways Committee have decided that it is impracticable for them under present conditions to maintain the service.

Austrian Tramways Obstructed.—On January 17, workmen assembled in the streets of Vienna, and at a given signal placed themselves on the tramway lines, thus preventing all traffic. At Budapest, on January 21, the demonstrations of hungry people in favour of peace had brought about the cessation of tramway traffic.

Summer Time to be Continued.—Sir George Cave, the Home Secretary, stated in the House of Commons on January 18, that the experience of the second year of "Summer Time" had confirmed the conclusions of the first year, and he thought it would be in accordance with the general wish that summer time should be continued.

Control of the United States Railroads.—Mr. McAdoo, director-general of railroads, has stated that the so-called short line railroads would be released from Government operation as soon as investigation determined that such operation was unnecessary. It was not intended to keep control of any superfluous lines, nor would the Government compensate any not taken over.

Petrol for Omnibuses.—The Petrol Committee agreed to allot 300 gallons of petrol to the motor omnibus department of West Bridgford Council for December. Investigations made locally by an official of the Committee show that there will be a shortage of 200 gallons on the quantity needed to maintain the present service. Experiments are being made with the object of economising in the use of spirit.

The Shrewsbury S.T. and Challiner Tyre Co., Ltd., have re-opened their Leeds office at Crown Chambers, Albion Street (telephone No. 5284 Central; telegraphic address: "Challiner, Leeds"). Arrangements have been made for carrying suitable stocks of solid tyres, and special arrangements with the firm of Mr. R. Hutchinson, Wellington Bridge, ensure the prompt fitting of renewal tyres, with ample accommodation for vehicles.

Exemption for Hull Tramwaymen.—Mr. J. Wilkinson, tramways engineer of Hull, recently applied for exemption for the driver of a tower wagon and the driver of the rail grinding machine. The former was 41 years of age and in category A, and the other was 33 years of age and was classed B1. Mr. Wilkinson stated that the retention of the men was necessary in the public interest, and exemption was granted in both cases.

Metropolitan Association of Electric Tramways Managers.—A meeting of the members of this Association was held at the Municipal and County Club, Whitehall Court, Whitehall, S.W., on Friday, January 18, when there were present:—Messrs. Ullmann (East Ham), Slattery (West Ham), Goodyer (Croydon), Hammond (Met. Elec.), Mason (South Met.), and Mackinnon (London United). Various matters of interest were discussed.

Yorkshire Municipal Tramways Council.—A meeting of this Council was held in Leeds on January 21, in order to consider the national application for increased wages, and the invitation of Sir George Askwith to attend a general conference in London on January 29. All Yorkshire municipal tramways were represented, and Alderman W. C. Fenton (chairman) presided. A full discussion ensued. Afterwards Mr. A. R. Fearnley, honorary secretary of the Municipal Tramways Association, made an explanatory statement, setting forth the constitution, scope, and objects of the newly-appointed Tramways (Board of Trade) Committee. The members heard the statement with great interest, and afterwards expressed their high appreciation of all that had been done by Mr. Fearnley and those associated with him in connection with the establishment of the Committee.

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Use of Snow Ploughs at Blackpool.—Referring to the heavy snowfall on Monday, January 14, the *Blackpool Times* alludes to the excellent arrangement made by the Tramways Department to keep the lines clear of snow, which allowed the tramway service to be continued. Snow ploughs were kept running over the lines, and effectually prevented the snow from accumulating. Prevention in this case proved better than cure, and real economy resulted from the forethought of the management, which was prepared for the emergency.

Tramway Buildings as Army Clothing Centre.—Since the Army Clothing Department three years ago took control of the manufacture of cloth for military uniforms in Leeds and the West Riding, the new Swinegate tramway depot and offices of Leeds Corporation Tramways have been used as a central depot and administrative centre of the work. Recently battery-propelled trucks have been used to convey the completed uniforms from the unpacker and checker through the series of examinations to the final packing for issue.

Track in Desperate Condition.—Cardiff tramways engineer, at a meeting of the Committee on January 18, called attention to the wretched state of the track in Penarth Road and Constellation Street. If there was going to be long delay in repairing it he would have to recommend that the tramway service be closed down in Penarth Road. They had had four of the best cars smashed there that week, and motor cases and axle frames were being repeatedly broken. The Lord Mayor, as chairman of the Public Works Committee, promised to attend to the matter at once.

Labour Difficulties at Blackburn.—At a meeting of the local branch of the Amalgamated Association of Tramway and Vehicle Workers on Saturday, a strike committee was appointed and urged to exert their utmost influence to get into their union all the employees of the tramways who were eligible for membership. The employees contend that the Tramways Committee are interpreting the findings of the Committee on Production in a way different from that of the other Lancashire towns concerned, claiming that the scale of payment under which the men have been paid does not satisfactorily carry into effect the terms of the award.

Legal Proceedings by London Tramway Department.—The Highways Committee reported to a meeting of London County Council on Tuesday that legal proceedings were taken against five persons for obstructing tramway cars, and in four cases a fine was imposed. Five persons were prosecuted for assaulting tramway employees, a fine being imposed in three cases, while the persons concerned in the remaining two cases were each sentenced to six weeks' imprisonment with hard labour. Two persons were fined for avoiding payment of fares, two for being drunk while boarding a tramway car, and one person was fined for spitting in a car.

The Recent Glasgow Accident.—At a public inquiry, before Sheriff Harvey and a jury in Glasgow on January 17, regarding the tramway accident in Victoria Road on December 5 last, facts similar to those which had been adduced at the Board of Trade inquiry were brought forward. The jury returned a formal verdict, and added a rider stating that the accident was caused by the car taking a curve at excessive speed, and through the brakes not being applied soon enough. Owing to the insufficient light the driver failed to see the curve in time to prevent the accident. They recommended that the stopping-places at that and all similar curves be placed before the curve instead of in or round the curves.

A Peculiar Decision.—In Paignton County Court on January 21, Judge Lush-Wilson gave a decision in favour of the plaintiff in a case in which Mr. T. J. Wells sued the Torquay Tramway Company for £15 17s. as damages. His case was that he was about to enter a car which had come to "dead slow," when the car suddenly started and he was thrown on his knees. On getting inside he asked the conductress why she was not at her post, to which she replied that she was inside taking tickets. The Judge said that the accident would never have happened if the conductress had kept in her proper place, where passengers got out and in, and had not been inside. He therefore held that there was negligence on her part, and no contributory negligence on the part of the plaintiff.

A Manager's Slander Action.—Mr. G. F. Moller, manager of Lanarkshire Tramways, brought an action in Hamilton Sheriff Court against William Barton for alleged slander. The pursuer alleged that while travelling in a car, accompanied by his wife and family, the defender had made the slanderous statement that he (pursuer) was of German birth, a statement which had caused him much annoyance and might have had disagreeable consequences. For the defender, an apology was submitted and a withdrawal of the statement absolutely, besides an offer to hand over a donation to the Red Cross. The pursuer accepted the apology and the accompanying offer, and Sheriff Shennan said the defender had acted wisely in thus making amends for what he knew to be untrue.

Notable Increase in Receipts at Birmingham.—The receipts of the Birmingham Corporation tramways during the current financial year have shown a remarkable increase, and the year which closes on March 25 next will form a record. The resources of the undertaking are taxed to the utmost, as enormous numbers of munition workers depend upon the cars for transport to and from their work. The number of passengers carried during the week ended January 12 was 3,763,809, and the receipts £18,651, increases over the corresponding week of last year of 522,718 and £3,018 respectively. By the motor 'buses 120,340 persons travelled, while the receipts totalled £1,072, an increase of £224 on the week. The total receipts from the tramways for the forty-one weeks to January 12 were £758,308, an increase of £105,188 over the corresponding period last year, and from the motor omnibuses £43,602, an increase of £2,930.

Dealing with Snow in Belfast.—At last week's meeting of Belfast Tramways Committee the general manager reported that owing to the severe snowstorms during the past fortnight the department had experienced very trying and difficult times, but that he was pleased to state the full service of cars had been maintained on all routes. Several snow-ploughs were employed with excellent results, having travelled roughly 1,150 miles and distributed 60 tons of salt over the whole track. On the Queen's Road section, windows had been broken in over twenty-seven cars by youths and men throwing snowballs at the cars passing up and down the road, and he had communicated with the secretary of the Harbour Commissioners on this subject with a view to action being taken by the Harbour Police to prevent a recurrence of this practice.

National Tramways Committee.—The Tramways (Board of Trade) Committee visited Portsmouth last week and investigated the scheme for the formation at Cosham terminus of a pear-shaped loop line with provision separately for loading and unloading of cars. Mr. J. B. Hamilton and Mr. A. L. C. Fell, members of the National Committee, had an interview with the Mayor, the chairman of Portsmouth Tramways Committee, and Mr. Léroné, the tramways engineer. According to local reports Mr. Fell and Mr. Hamilton could not hold out any hope that the whole of the scheme would be approved at present, but they were in favour of a part of it proceeding. Under this the Corporation would be allowed to take up existing car lines and lay them on the Committee's newly acquired land. They would constitute a dead-end, as at present, but there would be arrangements for barriers and queues for the regulation of passengers. The Portsmouth Tramways Committee are hopeful that they will soon be given formal permission to proceed with the abbreviated scheme, so as to prevent dangerous crowding.

Effect of Snow and Thaw in Scotland.—The Glasgow tramway service was greatly interfered with as a result of the heavy snowfall on January 18 and 19. On the Saturday the conditions were particularly difficult. As a consequence of the heavy rain on that day the heaps of snow on the roadsides melted rapidly, and the streets were covered with slush. In the afternoon the service was in an unprecedented condition. Slush got into the motors, and it was reported that no fewer than 377 cars had to be withdrawn. On Sunday only half the usual number of cars were running, and it will be some days before the normal number of cars will be available. Many of the ordinary tramway passengers had recourse to the subway, which was overcrowded. The demand upon the staff of the cleansing department was so great that an appeal was made for volunteers to help cleanse the streets. As a consequence of the withdrawal of the cars there was a great decrease in the receipts for the week, which amounted to £21,964, as compared with £24,874 in the previous week, and £22,952 in the corresponding period of last year. On Sunday the receipts were £1,615, as compared with £2,006 on the previous Sunday. The Paisley cars were also badly affected. Similar conditions prevailed in Aberdeen, the cold and snowfall being suddenly interrupted by mild weather. During the storm the tramway service had been well maintained, but when the thaw came a number of the cars were put out of service owing to the effect of the salt and slush on the motors. On Monday thirty of the cars were disabled, but a reduced service was maintained on all routes.

PERSONAL.

Sergeant H. Heaton, who before the war was a tramway conductor in Halifax, has been awarded the Military Medal for gallantry in the military operations last November.

Lance-Corporal F. Shackleton, formerly on the staff of the Oldham Corporation tramways, has been awarded the Military Medal for bravery in dealing with transports under heavy shell fire.

Mr. C. H. Merz, who already holds the post of Director of Experiments and Research (unpaid) at the Admiralty, has been appointed a member of the Central Committee of the Board of Invention and Research.

Alderman C. F. Spencer, chairman of Halifax Tramways Committee, will, it is announced, be put in charge of a new department about to be set up by the Ministry of Food to deal with the establishmens of communal kitchens.

Mr. J. D. Caird, traffic manager of the Halifax Corporation tramways, is recovering from a serious illness which has lasted over two weeks. Although not yet able to resume his duties, his progress is reported to be very satisfactory.

Professor M. Maclean will deliver a lecture on "Kelvin as a teacher" before the Institution of Electrical Engineers on February 7, at 6 p.m. The meeting will be held at the Institution of Civil Engineers, Great George Street, Westminster, S.W.

Mr. H. C. B. Underdown has been elected a member of the Council of the British Engineers' Association as a representative of the Association of British Motor and Allied Manufacturers. Mr. Underdown, who is chairman and managing director of Commercial Cars, Ltd., of Luton, is chairman of the Commercial Vehicle Section of the A.B.M.A.M.

Captain J. Steven Hamilton, of the West Yorkshire Regiment, second son of Mr. J. B. Hamilton, general manager of Leeds tramways, has received his captaincy and the D.S.O. for his services in a brilliant advance by the West Yorkshires. Captain Hamilton is one of five brothers who have all served in the West Yorkshires, and one of whom was reported missing some months ago. Prior to the war he was assistant-engineer to the Leeds tramway department.

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Board of Trade Appointments.—The President of the Board of Trade has made the following appointments:—Mr. S. J. Chapman to be assistant secretary (in charge of the General Economic Department); Mr. H. F. Carlill to be assistant secretary (in charge of the Industrial Power and Transport Department); Mr. P. Ashley to be assistant secretary (in charge of the Industries and Manufactures Department); Mr. A. W. Flux to be assistant secretary (in charge of the Statistical Department).

Staff-Captain W. Alan Fraser, R.E., who has been killed in action, was formerly tramway manager and electrical engineer to Nelson Corporation. He had been mentioned in despatches by Sir Douglas Haig.

We regret to have to announce the death on active service of **Lieut. J. W. Dugdale** (Road Battalion). Lieut. Dugdale will be remembered by our readers as the former general manager of the Oldham Corporation tramways, and previously connected with tramway undertakings at Ashton, Oxford and Sheffield. Lieut. Dugdale resigned his appointment at Oldham soon after the commencement of the war, and took up a post with the Ministry of Munitions, afterwards transferring to the Road Battalion. He sustained shell shock and trench fever shortly after he arrived at the front, and died in the Rouen Military Hospital on January 3. Although Lieut. Dugdale was well past the military age, his well-known enthusiasm prompted him to offer his services where he believed they would be of the best value to his country. His death has added another name to the already long list of those connected with the tramway world who have fallen in the war.

The Late Sir John Wolfe-Barry.—The name of Sir John Wolfe-Barry has, even outside engineering circles, been for more than a generation almost a household word in this country. Tramway men, like those engaged in many other technical walks of life, feel special regret at the news of his death, which occurred on January 22, in his 82nd year. He had a long, varied and successful life as a consulting engineer. Largely he devoted himself to dock, railway and bridge construction. Among a host of undertakings at home and abroad with which he was connected were the Metropolitan District Railway, the Tower Bridge, Kew Bridge and Blackfriars Railway Bridge. In connection with the problems of urban transport he will be remembered as a member of the Royal Commission on London Traffic from 1903 to 1905, and he with Sir Benjamin Baker and Mr. W. B. Parsons formed the advisory board of engineers who were appointed to advise the Commission as experts on streets, tramways, and railways. Their report was voluminous, and if the schemes it embodied were carried out they would no doubt be expensive, but would pay in the long run. Sir John did a great service to the engineering community and thus indirectly to the public at large by establishing the British Engineering Standards Committee. It was at his instance in 1901 that the Council of the Institution of Civil Engineers took up the matter. From a small beginning the Standards Committee grew, till now it has about sixty sectional committees and sub-committees covering the whole range of engineering practice. The standards established have led to enormous savings in money and labour, and tramways like other things have benefited from the work of this organisation. For example, the British standard sections of tramway rails have superseded a host of miscellaneous patterns. Engineering education and its improvement was one of Sir John Wolfe-Barry's strong interests, and he showed his energy and versatility by acting as a member of quite a number of Royal Commissions on different subjects. On the philanthropic side, the Westminster Hospital, of which he was chairman, owes much to him.

FINANCIAL REPORTS AND MEETINGS.

Isle of Thanet Electric Tramways and Lighting Company, Ltd.—The accounts for the year ended September 30, 1917, show a loss of £4,731, which reduces the credit balance to be carried forward to £3,825.

Scarborough South Cliff Tramway.—The accounts for the past year show £428 for distribution. It is proposed to add £23 to the debenture sinking fund, and to pay a dividend of 3 per cent. (free of income-tax), carrying forward £135.

Dunlop Rubber Company.—The net profits for the past year amounted to £435,109, and £82,930 was brought forward. Dividends amounting to 15 per cent. have been paid on ordinary shares, and it is proposed to write £75,000 off plant and £89,648 off issue expenses, carrying forward the surplus of £103,466. For 1915-16 net profits were £432,438; for 1914-15, £411,639; for 1913-14, £381,919; and for 1912-13, £350,356. Ordinary shares received 15 per cent. for each period, and sums varying from £171,213 to £227,037 were set aside.

Cardiff Tramways.—At a meeting of Cardiff Electric Lighting and Tramways Committee on January 18, the city treasurer submitted a report on the accounts of the tramway undertaking for the year ended March 31 last. The main results were:—Receipts, £154,104, as against £145,875; working expenses, £107,600, an increase of £16,867; net revenue surplus, £16,027, an increase of £2,448. The payment to reservists and recruits amounted to £4,980. The net liability of the undertaking at March 31, 1917, was £450,495. It was decided to allocate £10,000 to renewal and reconstruction of the track, £5,000 to the reconstruction and renewal of cars, and the balance to be carried forward. The chairman (Sir John Courtis) said that owing to the great increase in wages there would probably be no surplus for the year ended March next.

Siemen's Shares.—Sir Albert Stanley, in reply to a question in the House of Commons, has stated that the shares in Siemens Brothers and Co., Ltd., vested in the Public Trustee, have been sold to subjects of British birth. No company has been formed for the purpose of purchasing the shares. One of the conditions of the sale is that the articles of association shall be altered so as to ensure that the control of the company will in future be vested in British subjects, and the Public Trustee has received assurance as to the continuance of the business.

Yorkshire (West Riding) Tramways Company.—Presiding at the annual meeting in London of this company, Sir H. Leon said that the year under review had been an unprecedented one of difficulty, but it had not been unsuccessful despite all they had had to contend with. It was impossible for him to exaggerate the labour difficulty. A large percentage of their men had joined the Army, and the company were now employing women. During the year they had carried over 14,863,000 passengers, an increase of nearly 2,000,000, most of whom were miners and munition workers. The year, like its predecessors, had been marked by the amicable relations which existed between the company and the various district authorities through which their lines passed.

Metropolitan Railway Company.—The directors of the Metropolitan Railway Company announce that, subject to final audit, they will recommend a dividend upon the ordinary stock for the past half-year at the rate of 1 per cent. per annum, making 1 per cent. for the year, and carrying forward about £16,000, after placing £20,000 to the general renewals fund. The dividend on the Surplus Lands stock will be at the rate of 2¾ per cent. per annum, carrying forward about £2,500, after placing £3,000 to the reserve fund. A year ago the dividends on both the ordinary and Surplus Lands stocks were at the same rates as those now announced, £20,000 was placed to renewals, and £14,492 carried forward. In the case of the Surplus Lands stock £2,600 was carried forward, after £3,800 had been placed to reserve.

Edinburgh and District Tramways Co., Ltd.—The report for the year ended December 31 states that the agreement between the Corporation and the company for the purchase of the company's cars and plant at the expiration of the lease in 1919 has now been signed and sealed. The traffic receipts amounted to £373,729 18s. 4d., other receipts, £2,257 14s. 11d., making an aggregate of £375,987 13s. 3d. Working and general expenses were £228,759 0s. 4d.; rent to Corporation, £104,583 13s. 3d., other charges, £8,426 8s. 11d.; making a total of £341,769 2s. 6d., and leaving a balance of £34,218 10s. 9d. Deducting the debit balance of last year of £19,894 6s. 1d., there is a credit balance of £14,324, which has been appropriated as follows:—Interest on capital redemption and special reserve und, £3,213 19s. 4d.; interest on debentures, £753; investment depreciation, £4,500; capital redemption fund contributions, 1916 and 1917, £4,080; provision for contingent liabilities, £1,777 5s. 4d.

Unfair Treatment of the East London Railway Company.—The report for the year ended December 31, 1917, states that the accounts between the companies in respect of receipts and working expenses are not rendered, and there is no clearance of controlled traffic owing to the railway being under Government control. The number of passengers in 1916 was 9,363,822 and the number for 1917 is estimated at 9,172,734. These figures are exclusive of journeys made by season-tickets holders, of which there has been a large proportionate increase. If this increase were taken into consideration, the number of passengers carried would, it is estimated, be augmented by 600,000. At the average rate of 1·27d. for each passenger, the traffic from this source alone should now yield approximately £51,700 per annum, without taking into account the increase of 50 per cent. on some of the fares. The company has not been able to obtain any mitigation of the effect of the rules imposed by the Government on railways under its control in respect of capital expenditure which had not fructified prior to the end of the year 1913. The net result of this is that the general public have enormously benefited by the company's expenditure in electrifying the lines, while shareholders are, and will continue to be, penalised to the extent of upwards of £3,000 per annum in respect of the interest on electrification capital until the end of the period of Government control. The chairman, Lord Claud Hamilton, M.P., proposes to go fully into this matter at the annual meeting, which will be held on January 31.

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash Jan. 24 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	71½	69½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅞	55/-	55/-
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4¼	49/9	49/9
4%	4%	Do. 4% Deb.	100	91	68½	68½
4½%	4½%	Do. 4½% Deb.	100	98½	68	68
5%	5%	Do. 5% Deb.	100	96	65½	65½
—	—	Associated Omnibus Co., Ord. ..	5/-	3/8	1/3	1/3
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1 3/16	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	90½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	100½	101½
—	1/-	Bath Electric Trams Pref. Ord.	1	½	4/-	4/-
6d.	6d.	Do. 5% Cum. Pref. ..	1	3/16	10/9	11/-
4½%	4½%	Do. 4½% 1st. Mort. Deb. ..	100	72⅝	70	70
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77¼	77¼
14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	20½	20½
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11⅜	9⅞	9⅞
4½%	4½%	Do. 4½% Deb.	100	96	75	77
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	45½	47
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	89	88½
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	£5/0/0	£5/0/0
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	77/6	77/6
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	90½	90½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	29½	29½
6%	5%	Do. Pref. Ord.	100	106	29	29
5%	5%	Do. 5% Cum. Pref. ..	100	103	45	45
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	84½	82⅝
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	58	58
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	32½	31½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	73	73
5%	5%	Do. 5% Deb.	100	92	77½	76⅝
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65⅛	65
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	72⅝	72⅝
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6 1/16	6 1/16
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	81/3	81/3
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	72⅜	72⅜
1/-*	1/-*	Cape Elec. Trams.	1	1/16	12/3	12/3
1/3	1/3	City of B. A. Trams	5	5½	83/9	82/6
4%	4%	Do. 4% Deb.	100	97½	68½	70
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	85	85
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	80½	79¾
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
3/-	4/-	Dublin United Trams. Ord. ..	10	8	7½	7½
6/-	6/-	Do. 6% Pref.	10	12	10⅝	10⅝
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/1½	-/9
1/2⅜*	1/2⅜*	Do. 6% Cum. Pref. ..	1	1/16	10/4½	9/3
4½%	4½%	Do. 4½% Deb.	100	67⅜	53	53
1/1½	5⅜d.	Hong Kong Tramway	5/-	1/16	17/1½	17/1½
5%	5%	Do. 5% Deb. ..	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44⅜	44⅜
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	3/16	2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co. ..	10	10½	9⅞	9⅞
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79⅛	79⅛
9¾d.*	9¾d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
--	1½d.	London & Sub. Traction Ord. ..	1	1/16	2/3½	2/3½
6d.	6d.	Do. 5% Pref.	1	1/16	6/3	7/-
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	62½	62½
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	79¾	79¾
5%	5%	Do. 5% Inc. Deb.	100	88½	79	79
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	36½	37
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	87½	87½
7½d.%*	9¾d.*	Manaos Trams & Ltg. Ord. ..	1	1/32	3/1⅛	3/11
5%	5%	Do. 5% 1st Deb.	100	77	71	71
$1½	$1½	Manila Elec. R. R. & Light .	$100	102	72⅛	72⅜
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70	70
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	29	30½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	39	36
—	—	Do. 6% Mt. Bds. ..	100	76	25½	25½
4½%	4½%	Montreal St. 4½% Stg. Dbs. ..	100	100	91½	91½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	1/16	17/9	17/-
9¾d.*	9¾d.*	New General Traction	1	1/8	7/3	7/3
8½d.	6d.	Northern Gen. Trans. Ord. ..	1	3/32	12/9⅜	12/9⅜
6/-*	3/-	Para Elec. Rlys. Ord.	5	4½	79/4½	79/4½
5%	5%	Do. 5% 1st Deb.	100	89⅛	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	7/7½	6/7½
—	—	Do. 7% Non. Cm. Part Pf.	1	—	12/6	12/6
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1	1/16	6/9	6/7½
6d.	6d.	Do. 5% Pref.	1	1/32	12/-	12/1½
8d.	1/4	Provincial Trams. Ord. ..	1	¼	20/3	20/3
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	88/9	88/9
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	81	81
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	86	87½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	75	75½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86⅜	86⅜
5%	5%	Do. 5% Perp. Deb. ..	100	99½	75	75
12/-	10/-	Shanghai Elec. Cons.	10	13	14⅜	14⅜
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/7	4/7
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	88	88
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	91¾	91¾
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77⅜	77⅜
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	31/3	31/3
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	66	66
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅛	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅜	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	76½	76½
—	—	Metropolitan Dist. Ord. ..	100	21⅜	15⅛	15⅜
—	—	Undgd. Elec. Rys. of London ..	10	21½	35/-	34/9
		Do. "A"	1/-	⅜	5/0⅜	5/0⅜
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	102½	100⅜
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	102	102½
%	4%	Do. 6% In. Bonds Rd. ..	—	88⅛	81½	82

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1916-17	Latest Return. 1917-18	Latest Return. Incr. or Dec.	Aggregate. Wks.	Aggregate. 1917-18	Aggregate. Incr. or Dec.
Aberdare U.D.C. ..	Jan. 15	374	430	+ 56	41	18,495	+ 1,793
Aberdeen Corporation ..	,, 16	1,789	2,020	+ 231	33	71,601	+ 8,090
Ayr Corporation ..	,, 19	253	291	+ 38	36	17,208	+ 2,079
Belfast City	,, 11	5,528	6,926	+ 1,398	41	268,720	+ 34,079
Birkenhead Corporation	,, 20	1,455	1,811	+ 356	42½	77,509	+ 12,270
Birmingham Corporation	,, 12	15,632	18,651	+ 3,019	41	758,308	+ 105,188
do. Motor Omnibuses ..	,, 12	848	1,072	+ 224	41	43,602	+ 2,930
Blackburn Corporation ..	,, 16	1,053	1,245	+ 192	42⅔	62,944	+ 10,247
Blackpool & Fleetwood ..	Dec. 31	445	716	+ 271	51⅔	44,164	+ 1,148
Bournemouth Corporation	Jan. 23	1,670	2,308	+ 638	42⅔	108,670	+ 10,820
Bradford Corporation ..	,, 19	5,966	6,588	+ 622	42	322,291	+ 35,960
Burnley Corporation ..	,, 19	1,474	1,718	+ 244	..	..	..
Burton-on-Trent Cor. ..	,, 20	282	371	+ 89	42	12,395	+ 1,591
Bury Corporation ..	,, 20	1,293	1,415	+ 122	42½	69,158	+ 8,865
Chatham & District ..	,, 17	1,065	1,057	— 8	3	2,530	— 259
Cork Electric	,, 17	421	531	+ 110	3	1,257	+ 93
Derby Corporation ..	,, 19	998	1,129	+ 131	42	51,120	+ 3,569
Dublin United	,, 11	6,169	6,824	+ 655	2	11,006	+ 963
Dundee City	,, 16	1,290	1,413	+ 123	35½	54,857	+ 5,577
East Ham Corporation ..	,, 19	1,160	1,170	+ 10	42	57,654	+ 3,438
Exeter Corporation ..	,, 18	334	358	+ 24	42	16,833	— 178
Glasgow Corporation ..	,, 19	22,952	21,965	— 987	33⅔	881,827	+ 98,507
Glossop (U.E. Sup. Co.) ..	,, 19	123	157	+ 34	3	511	+ 111
Halifax Corporation ..	,, 15	1,831	1,851	+ 20	41⅔	101,964	+ 9,785
do. Motor Buses ..	,, 15	45	41	— 4	41⅔	2,040	— £24
Hastings and District ..	,, 21	883	855	— 28	3	2,612	— 268
Huddersfield Corporation	,, 19	2,537	2,856	+ 319	42	134,255	+ 15,101
Ilford U.D. Council ..	,, 19	576	761	+ 185	42	32,088	+ 3,784
Ipswich Corporation ..	,, 19	380	532	+ 152	42	28,190	+ 6,738
Isle of Thanet	,, 19	209	179	— 30	16	2,632	— 1,518
Kilmarnock Corporation	,, 19	158	198	+ 40	35⅓	7,271	+ 945
Lanarkshire	,, 17	2,233	2,450	+ 217	3	7,436	+ 777
Lancashire United ..	,, 16	1,710	2,202	+ 492	3	5,334	+ 1,098
Leeds City	,, 19	9,084	10,324	+ 1,240	42	463,934	+ 51,262
Leicester Corporation ..	,, 19	3,190	4,256	+ 1,066	..	..	..
Leyton U.D. Council ..	,, 17	1,450	1,670	+ 220	42	78,475	+ 10,859
Liverpool Corporation ..	,, 12	14,331	15,717	+ 1,386	1⅔	28,037	+ 2,279
Llandudno & Colwyn Bay	,, 11	183	196	+ 13	6	1,367	+ 145
London County Council	,, 23	44,538	53,724	+ 9,186	42½	2,348,767	+ 315,930
Maidstone Corporation ..	,, 17	174	231	+ 57	42	10,307	+ 1,150
Manchester Corporation	,, 19	17,916	21,722	+ 3,806	42	878,230	+ 90,317
Nelson Corporation ..	,, 19	184	215	+ 31	42	9,881	+ 925
Newcastle-on-Tyne Cor.	,, 16	6,643	7,427	+ 784	42	330,626	+ 48,135
New St. Helens & Dist. ..	,, 16	960	1,118	+ 158	29	40,895	+ 9,363
Northampton Cor. ..	,, 18	690	757	+ 67	42	35,327	+ 4,913
Nottingham Corporation	,, 17	3,692	4,526	+ 834	42	186,155	+ 22,941
Oldham Corporation ..	,, 20	2,192	2,615	+ 423	43	121,096	+ 16,077
Portsmouth Corporation	,, 19	2,053	2,458	+ 405	..	..	..
Provincial	,, 19	1,880	2,265	+ 385	15⅔	36,795	+ 4,863
Reading Corporation ..	,, 17	851	1,026	+ 175	42	44,391	+ 8,200
Rhondda Tramways ..	,, 3	558	639	+ 80	⅜	639	+ 80
Rotherham Corporation	,, 23	1,601	1,872	+ 271	43½	77,476	+ 10,854
Salford Corporation ..	,, 21	5,165	6,490	+ 1,325	42⅔	279,731	+ 50,283
Sheffield Corporation ..	,, 20	10,568	12,081	+ 1,523	43	519,530	+ 64,702
Southampton Cor. ..	,, 16	1,548	2,089	+ 540	41⅔	85,995	+ 15,799
Southend-on-Sea Cor. ..	,, 16	594	630	+ 36	42	37,562	— 1,088
South Shields Cor. ..	,, 12	810	962	+ 152	41	39,393	+ 4,689
Sunderland Corporation.	,, 20	1,558	1,875	+ 317	42	77,731	+ 6,175
Sunderland District ..	,, 10	762	726	— 36	10	4,382	+ 806
Swindon Corporation	,, 10	188	269	+ 81	41⅓	11,352	+ 2,713
Torquay Tramways	,, 3	257	297	+ 40	⅜	297	+ 40
Tyneside Trys. & Trmrds	,, 9	585	719	+ 134	2	989	+ 122
Wallasey Corporation	,, 19	1,150	1,350	+ 200	42⅔	66,224	+ 8,492
Walsall Corporation ..	,, 19	543	1,016	+ 473	42	41,854	+ 7,118
Walthamstow U.D. Coun.	,, 19	909	1,108	+ 199	42	51,456	+ 5,870
Warrington Corporation	,, 17	497	709	+ 212	42	24,508	+ 3,477
West Ham Corporation	,, 17	2,940	3,472	+ 531	41⅓	152,747	+ 18,398
Wigan Corporation ..	,, 17	1,608	1,998	+ 390	42	85,002	+ 13,880
Yorkshire (West Riding)	,, 20	1,726	2,125	+ 399	3	6,507	+ 1,205

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	Latest Return. 1917-18	Aggregate. Wks.	Aggregate. 1917-18	Aggregate. Increase or Dec.
Anglo-Argentine	Jan. 21	£46,818	£52,850	3	£160,264	+ £10,271
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Nov.	3,430	3,552	32	25,665	+ 125
Brazilian Traction (Mrs.)	Nov.	7,160,000	7,695,000	47	84,131,000	+ 6,558,000
Brisbane	Dec.	32,910	35,019	52	396,339	+ 6,269
British Columbia .. $	Nov.	472,767	525,629	21	2,368,105	+ 199,679
Buenos Aires Lacroze ..	Dec.	40,106	40,901	26	230,476	— 419
Burmah Tram. & Light Rs.	Dec.	32,551	26,224	21	135,822	— 1,483
Calcutta .. .. Rs.	Jan. 12	73,725	74,367	2	131,539	+ 3,104
Cape Town	Dec.	..	19,803	..	..	..
Carthagena and Herrerias	Dec.	2,399	4,424	52	49,566	+ 19,776
Cordoba	Nov.	12,836	13,339	34	108,715	— 2,137
East India	Dec.	2,120	1,099	22	6,273	— 4,914
Hong Kong .. .. $	Nov. 17	12,363	12,308	46	622,320	— 243
Kalgoorlie	Aug.	3,021	2,911	34	21,065	+ 586
La Plata	Dec.	4,437	4,606	52	48,963	— 1,874
Lima	Dec.	37,171	41,697	52	438,895	+ 30,725
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Jan. 15	36,493	37,736	2	37,736	+ 1,243
Manila .. .. $	June	59,432	73,900	..	..	..
Manaos .. .. Rs.	Sept.	141,286	157,761	..	..	..
Montevideo	Dec.	31,364	34,025	8	65,085	+ 5,317
Pernambuco	Jan. 13	3,655	4,651	2	9,370	+ 2,165
Peruvian .. .. $	Dec.	990,842	1,101,090	26	6,088,270	+ 582,778
Port Elizabeth	Dec.	..	4,920	..	..	..
Rangoon	Dec.	4,904	5,438	52	60,817	+ 2,509
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Nov. 24	12,037	12,088	47	605,644	+ 12,300
Toronto .. .. $	Nov.	911,829	1,052,000	47	10,986,998	+ 1,161,954
Winnipeg .. .. $	Nov.	282,899	305,881	47	3,039,397	+ 16,227

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CONTRACTS AND ORDERS.

Southend Council have offered to sell three omnibus bodies to Morcambe Council.

Frederick Smith & Co., Ltd., Halifax, have received an order from Glasgow Corporation for trolley wire, and P. R. Jackson & Co., Ltd., for armature coils.

Glasgow Electricity Committee has decided to purchase a second 15,000 KW. set for Dalmarnock at £110,000 from the British Westinghouse Electric and Manufacturing Co., Ltd.

Melbourne Tramways Board has accepted the tender of the Australian General Electric Company at £39,720 for the supply of electric lighting plant and apparatus for the whole of the cars.—*Tender*.

Lancaster Council have obtained the consent of the Ministry of Munitions to purchasing five motor omnibuses in order to provide for the transport of the workers employed by the new munition works.

Siemens Brothers Dynamo Works, Ltd., 38 and 39, Upper Thames Street, London, E.C.4, notify us that Wotan traction type lamps have been adopted on the London County Council tramway cars, and a contract has been placed with them covering the total requirements for the ensuing twelve months. The number of lamps required will be approximately 150,000.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended January 23 amounted to £53,724, an increase of £9,186, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to January 23 (forty-two and a half weeks) the total receipts were £2,348,767, an increase of £315,930, on the corresponding period of 1917.

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Cawnpore Electric Tramways
Delhi Electric Tramways
Mandalay Electric Tramways
Dover Corporation Tramways
Newcastle-on-Tyne Corporation Tramways
Cork Electric Tramways and Lighting Co., Ltd.
Isle of Thanet Electric Tramways Company, Ltd.
Keighley Corporation Tramways
Keighley Corporation Motor 'Buses
Burton-on-Trent Corporation Tramways
Scarborough Electric Tramways Co., Ltd.
Aberdeen Suburban Tramways Co.
Paisley & District Tramways Co.
Hastings & District Electric Tramways Co., Ltd.
Gosport and Fareham Tramways Co.
Doncaster Corporation Tramways
Cardiff Corporation Tramways
Plymouth Tramways
Gloucester Corporation Light Railways
Ilkeston Corporation Tramways
Stockport Corporation Tramways
Accrington Corporation Tramways
Ilford Council Tramways
Aberdeen Corporation Tramways
Bradford Corporation Tramways
Southampton Corporation Tramways
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BIRMINGHAM—147, Corporation Street.
LEEDS—Standard Assurance Buildings, City Square.
NEWCASTLE-ON-TYNE—50, Grey Street.

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TRAMWAY TRACK CONSTRUCTION AND MAINTENANCE.

By R. BICKERSTAFFE HOLT,

Highways and Permanent Way Engineer, City of Leeds.

CONTENTS:

FOREWORD.
What's wrong with the Track?"

CHAPTER I.—CONCRETE FOUNDATIONS.
Defects—Causes of fracture—Method of laying concrete.

CHAPTER II.—CONCRETE MATERIALS.
Road metal—Water-gravel—Sand—Clinker-sand—Trass.

CHAPTER III.—REPAIRS TO CONCRETE FOUNDATIONS.
Patching—Partial repairs—Complete renewal.

CHAPTER IV.—TRACK DESIGN.
"Follow my leader" policy—Importance of local conditions—Effect on sub-soil—Standard methods—Transverse sleeper tracks—Effect of vehicular traffic and tramway car traffic.

CHAPTER V.—RAIL PACKING.
Pitch and tar packing—Materials—Testing and preparation of materials—Prepared tar—Pitch mixtures—Movement of rails—Packing and floating.

CHAPTER VI.—RAIL LAYING.
Bad rail packing—Rails canted or twisted—Anchoring and Padding—Rail expansion and contraction—Curving of rails—Springing of rails—Anchoring tracks.

CHAPTER VII.—JOINTS, FISH PLATES, BOLTS AND NUTS
Why joints fail—Dished or hammered joints—Movemen at joints.

CHAPTER VIII.—JOINT WELDING.
Methods of welding—Thermit welding—Electric arc welding process—Expansion and contraction—Oxy-acetylene process.

CHAPTER IX.—RAIL WEAR.
At joints—On new tracks—On steep gradients—On wheel tires—Contact of wheel and tire—Leeds special rail section—Railway rails—Depression of check.

CHAPTER X.—COMPOSITION AND MANUFACTURE OF TRAMWAY RAILS AND RAIL WEAR.
Defective rails—Composition of rails—Standard specification—Basic and acid Bessemer process—Sandberg process—Analysis of rails and rail tests—Drop test unnecessary.

CHAPTER XI.—CORROSION OF TRAMWAY RAILS.
Causes of rail corrosion—Exposure to sea water—Effect of corrosive liquid.

CHAPTER XII.—TRACK PAVING.
Effect of vehicular traffic—Cause of loose rails—Importance of quality in setts—Square-dressed setts—Nidged granite setts—Bonawe granite setts—Wood paving—Bedding of setts—Laying and ramming.

CHAPTER XIII.—RECONSTRUCTION.
Removal of tracks—Temporary tracks.

CHAPTER XIV.—SURFACE DRAINAGE AND RAIL MAINTENANCE.
Rail cleaning—Rail grinding—Rail planing.

CHAPTER XV.—SPECIAL TRACK WORK.
Design and standardisation of points—Unbroken main line crossings—Renewable plates—Switches—Mechanism for movable points—Heel pins—Tongue heel adjusters—Guard rails—Spiral tables for curves and junctions—Special track problems.

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THE

Tramway & Railway World

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

MANCHESTER CORPORATION TRAMWAYS.

The Tramways Committee of the Manchester Corporation are prepared to receive Tenders for the supply of the following:—

(*a*) Macintoshes, Capes, and Sou'Westers.
(*b*) Veterinary Services.
(*c*) Oxygen and Acetylene Gas and general stores, as set forth in the undermentioned Schedules, viz.:—

SCHEDULE A.
Motor and Controller Parts, etc.
Resistance Grids.
Armature and Field Coils.
Trolley Poles and Bases.
Lamps, Car Switches, Bells, Cells, etc.
Insulation Material.
Carbon Brushes and Carbons.
Overhead Equipment Material.
Trolley Wheel Bushes and Spindles.
Sanding Devices.
SCHEDULE B.
Cable (Power & Lighting) Bell Wire.
Copper and Steel Wire and Sheet Copper.
Galvanised Steel Cable, etc.
SCHEDULE C.
Timber and Sawdust.
SCHEDULE D.
Lubricants, Oils, Motor Spirit, Tar, etc.
Soaps, Disinfectants, Metal Polish, etc.
Paints, White and Red Lead, Varnishes, etc.
Methylated Spirits, Shellac, Turpentine, etc.
Transfers and English Gold Leaf.
Ambulance Accessories, etc.
SCHEDULE E.
Plate Glass, Ruby Glass, Globes, etc.
Crucibles, etc.
SCHEDULE F.
Rubber Strip, Goloshes, Gloves, etc.
Rubber Tyres for Motor Vehicles, etc.
Leather Belting, etc.
SCHEDULE G.
Workshop and Permanent Way Tools.
Lamps, Buckets, Cans, and Sundry Ironmongery.
Car Brass Furniture.
Metal Badges, etc.
Re-lacquering Roof Light Frames.
Grinding Blocks, Emery Wheels, etc.
SCHEDULE H.
Iron and Steel Bars and Sheets.
Steel Fish Bolts.
Bolts, Screws, etc.
Truck and Sundry Springs.
Chains, etc.
Ornamental Fences.
Steel Stampings, Iron and Steel Forgings, etc.
Anti-friction White Metal.
Lead.
SCHEDULE I.
Car Wheel Tyres.
Gear and Pinion Wheels.
SCHEDULE J.
Iron and Steel Castings.
Coal and Furnace Coke.
SCHEDULE K.
Paint, Varnish, Cleaning and Stable Brushes.
Sponges, Dusters, Cotton Waste, etc.
Lubricant Pads for Axle Boxes.
Rope, Cord, Lamp Wicks, etc.
Grey Duck, Twill, and Holland.
Leather Cash Bags, etc.
Lurry Sheets and Sand Bags.
Hampers, etc.
SCHEDULE L.
Portland Cement, Chippings and Broken Stone.
Sand, Bricks, Sanitary Fittings, etc.

Schedules, etc., may be obtained on application to Mr. J. M. McElroy, General Manager, Corporation Tramways, 55, Piccadilly, Manchester. Tenders are to be addressed to the Chairman of the Tramways Committee, 55, Piccadilly, Manchester, and must be received not later than 10 a.m. on Tuesday, February 12, 1918.

The Committee do not bind themselves to accept the lowest or any tender.

Town Hall, Manchester. THOMAS HUDSON,
February 2, 1918. Town Clerk.

BURGH OF LEITH.

Tramways Employees' Uniforms.

The Town Council invite Tenders for the supply of Summer Uniforms, factory or tailor made, as may be determined, conform to sample cloth and suits to be seen at the Tramways Offices, 165, Leith Walk, and to relative conditions of contract.

Particulars may be obtained from the Tramways Manager there.

Tenders (endorsed "Tramways Uniforms"), with separate sample of cloth, marked with a private mark, which shall not be recognisable until the Tenders are opened, must be lodged with me not later than February 13 next.

The lowest or any Tender may not necessarily be accepted.

D. ROBERTSON,
Town Clerk's Office, Leith. Town Clerk.
January 30, 1918.

COUNTY BOROUGH OF NEWPORT.

Electricity Department.

The Corporation invite Tenders for the following:—
Section 1. 3,000 kw. Turbo-Alternator.
Section 2. Surface Condensing Plantfor 3,000 kw. Turbo-Alternator.

Form of tender and contract, specification and drawings, and any further information may be obtained on application to A. Nichols Moore, M.I.E.E., Borough Electrical and Tramways Engineer, Town Hall, Newport, Mon., on payment of five guineas for each section, which deposit will only be refunded on receipt of a *bona-fide* tender. Further copies can be had on payment of 15s. 6d. each, which is not returnable.

Tenders must be enclosed in a sealed cover provided, and addressed to the Town Clerk, Town Hall, Newport, Mon., and endorsed in the left-hand corner, "Tender for Plant," Section 1 or 2, as the case may be, and delivered at my office by hand or through the post (registered) not later than 10 a.m. on February 18, 1918.

The Corporation do not bind themselves to accept the lowest or any tender.

ALBERT A. NEWMAN,
Town Hall, Newport, Mon. Town Clerk.
January 28, 1918.

COUNTY BOROUGH OF CROYDON.

Tramways Department.

Tenders for Supply of General Stores and Goods.

Notice is hereby given that the Council are prepared to receive tenders for the supply if and to the extent ordered by them of General Stores and Goods for their tramways department for three months ending June 30, 1918; six months ending September 30, 1918; and for the year ending March 31, 1919, particulars whereof are set forth in Schedules marked "A" to "M" inclusive, printed copies of which may be obtained on application to the Tramways Manager, Tramways Depot, Thornton Heath, Surrey.

Schedules, Forms of Tender (upon which alone tenders will be received), with particulars and conditions of contract, may be obtained from the Tramways Manager, at the above address, where samples are to be tendered to; these samples are exhibited for examination at the Tramways Depot aforesaid.

Sealed tenders (filled up as directed, which will only be received subject to the Schedules, Particulars, Conditions of Contract and Form of Tender) must be endorsed "Tender for General Stores (Tramways Department)," and delivered to me not later than ten o'clock in the forenoon on Monday, the 18th day of February, 1918.

The Council will only consider Tenders from persons stating they have examined the exhibited samples, and do not bind themselves to accept the lowest or any tender, and reserve to themselves the right of accepting tenders either in whole or part, as they may think fit.

JOHN M. NEWNHAM,
Town Clerk.

Town Hall, Croydon,
January 29, 1918.

POSITIONS VACANT.

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Tramway AND Railway World

Established in 1892 and Published by

THE TRAMWAY & RAILWAY WORLD PUBLISHING CO., Ltd., AMBERLEY HOUSE, NORFOLK STREET, LONDON, W.C.

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SATURDAY, FEBRUARY 2, 1918.

TRAMWAYS AND LABOUR.

THE conference of tramway employers and workers convened in London on Tuesday last by Sir George Askwith was attended by representatives of Corporation Tramway Committees and Companies from all over the country. In the circumstances in which the conference was convened, it could not have been expected that it would bring the questions at issue nearer to a settlement, but it provided at least an occasion for a clear statement of the demands of the employees. As stated by the representatives of the Union, the terms, which are to apply to both men and women, are that a basic rate shall be paid of £1 a week over the pre-war rate for a week of six days, and that all war bonuses hitherto granted shall be merged in this war wage. Payment for overtime is to be based on the increased scale. These demands, it appears, are to be pressed on all tramway undertakings whether large or small, profitable or not. Notices have not yet been given to all undertakings, but they will doubtless be received without much delay. At the conference the demand was put forward by the National Transport Federation, an association with which are affiliated some thirty-two different unions, representing very widely differing classes of industries, including the Amalgamated Association of Tramway and Vehicle Workers. The latter has only recently joined the Federation, which now wishes to represent all its strangely different constitutents in negotiations in regard to wages. Whether the Tramway Workers' Association really desires thus to be represented is by no means clear. It may be hoped that it does not, for the heterogeneous Federation is manifestly out of touch with passenger-carrying undertakings, whose conditions and interests as well as those of their employees are very different from those, for instance, of the carting and allied businesses. Moreover, the tramway and light railway industry is of such extent and importance that by the joint action of employers and employees it should secure the formation of separate national and district councils, as contemplated by the Whitley Report, without the combination of other interests. Sir George Askwith was informed at the conference that the tramway employers were willing and anxious to set up such councils; indeed, preliminary steps have already been taken to carry out the intention. In the meantime the present system of dealing locally with applications from employees is being continued, and where settlements are not effected, matters in dispute will be carried to arbitration. The Lancashire tramway workers' application, which affects a large number of undertakings, has already been considered and refused, and it will now go to the Committee on Production for adjudication. At present tramway undertakings which are under statutory restrictions are not in a position to grant further increases in wages because they are unable to increase their fares beyond the prescribed maximum. As pointed out in our last issue, the only remedy is that authority should be obtained for an increase of the possible fares. As the President of the Board of Trade admitted in the House of Commons on Thursday evening that an increase in the maximum fares appeared to be necessary, it is reasonable to hope that powers will shortly be given to the Board to sanction such increases as may be required to meet the conditions created by the enhanced cost of material and the increase in wages.

WAGES AND WAR BONUSES.

A new development has taken place in the tramway dispute at Blackburn. On Wednesday the town clerk forwarded the following letter to Mr. R. Wright, secretary of the Amalgamated Association of Tramway and Vehicle Workers :—

"Dear Sir,—Your letter of the 14th inst. has been laid before my Committee, who have carefully considered it. My Committee are quite willing to discuss with their employees or their representatives any differences which arise affecting their employment, and failing agreement, to submit to arbitration in accordance with the Munitions Acts. In such discussion or arbitration the whole of the men affected must be represented. I am instructed to point out that your letter is not in accordance with the provisions of the Munitions Acts, and that the threatened withdrawal of labour will be a breach of those Acts."

In the event of the amalgamated employees coming out on strike, the Municipal Employees Protection Society have expressed the opinion that those members of that organisation employed by the tramways will be able to carry on a restricted service of cars. The strike notices expire next week.

Preston Tramways Committee have received an application from the Amalgamated Association of Tramway and Vehicle Workers for 10s. a week advance for the whole of their male employees, and 13s. per week for the females of 18 years of age and over; 5s. for boys and 6s. 6d. for girls.

Stalybridge, Hyde, Mossley and Dukinfield Tramways and Electricity Board have referred to the arbitration of the Committee on Production an application from the Tramway and Vehicle Workers' Union for a further advance in wages.

A ROAD TRANSPORT BOARD.

It was officially announced on January 31 that the President of the Board of Trade, with the concurrence of the War Cabinet, has decided to appoint a Road Transport Board to co-ordinate the work of the existing Government Departments in connection with road transport; to determine what further measures are necessary to ensure the most economical use of road transport vehicles and their efficient allocation for meeting such requirements as may arise from time to time for the transport of food, munitions and other war material and for the essential needs of the trade and industry of the country; and, subject to the direction of the Board of Trade, to give executive effect thereto.

The Board will consist of representatives of each of the following Departments: Board of Trade (Petrol Control Department), Board of Trade (Horse Transport Department), Ministry of Munitions, Ministry of Food, War Office, and Post Office.

It is proposed that the Board shall exercise its executive functions through divisional road transport boards set up in each of the 15 divisional areas of the Food Commissioners, consisting in each case of: A road transport officer (appointed by the Board of Trade), the divisional food commissioner of the Ministry of Food or his representative, the local transport officer of the Ministry of Munitions or his representative, with two representatives of local interests; the chairman being the road transport officer. Sub-committees will

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be appointed by the divisional boards to deal with sub-areas of their divisions.

Sir Albert Stanley, replying in the House of Commons on January 30 to Mr. Gilbert, said: "It is not proposed to set up a Committee to control all forms of inland transport excluding railways, but it is proposed to set up a body forthwith to co-ordinate the work of the existing Government Departments in connection with road transport. It will not include canals and tramways, but will generally include other kinds of road traffic."

TRAMWAY FARES.

Mr. GILBERT asked the President of the Board of Trade in the House of Commons on Thursday if any decision has been come to by the Tramway Committee set up by his Department to increase all tramway fares by at least 50 per cent.; and if he can state whether he has power to consent to any increase of statutory tramway fares under the Defence of the Realm Act?

Sir A. STANLEY: The Tramways Committee have recommended that, to enable tramway undertakings to meet the increased cost of labour and materials, powers to increase statutory maximum tramway fares should be obtained by the Board of Trade. At present the Board of Trade have no general powers of this kind, and the question whether such powers should be sought is being considered.

Mr. GILBERT: Is it a fact that this Committee was really set up to deal with tramway material, and is the question of the increase of fares within their purview?

Sir A. STANLEY: I can only point out that in order to secure the material it may be desirable that tramway fares should be increased. The Committee have no power to authorise this; that would be for the consideration of the Board of Trade alone.

Mr. LOUGH: Does not my right hon. friend think that the Committee is travelling outside—and much outside—the terms of its reference by going into such issues?

Sir A. STANLEY: They are, I think, within their reference in bringing this matter to the attention of the Board of Trade. It does not bind the Board of Trade.

Mr. GILBERT: Will the right hon. gentleman say in what way this matter can be brought up again; will he bring up a recommendation to the House to increase the fares?

Sir A. STANLEY: This matter has just been brought to my attention. I had not heard of it previous to the question.

Mr. ROWLANDS: Will the right hon. gentleman give the House an opportunity of discussing the matter before action is taken?

No reply was given.

MISCELLANEOUS NEWS AND NOTES.

The London Address of Messrs. J. Hopkinson & Co., Ltd., of Huddersfield, is Hastings House, Norfolk Street, Strand, W.C. Telephone 3460.

Delivery of Parcels by Tramways at York.—The Electricity and Tramways Committee have appointed a sub-committee to meet the Transport Sub-Committee of the Food Control Committee with a view to considering the details of the proposal for the delivery of parcels by tramway cars.

Birmingham Tramways Committee require a workshop superintendent. As stated in an advertisement in another column, the commencing salary will be £400, rising to £500 per annum. Applications should be addressed to the General Manager by February 5.

British Engineering Standards Association.—An application has been made to the Board of Trade for a licence to authorise the formation of an association to be called the British Engineering Standards Association, to be registered with limited liability without the addition of the word Limited to its name.

Fine for Exceeding Speed.—The driver of a Newport Corporation tramway car was fined 20s. at the local court on January 28 for driving a car under Chepstow Bridge at the rate of ten to twelve miles an hour, the regulation speed at the point being only four miles an hour. The defendant pleaded that he was wounded at the front and his head was still affected.

Additional Facilities for Liverpool.—The Liverpool Corporation Tramways Committee are joining with the employers at certain munition factories and engineering works in the neighbourhood of the docks in making representation to the Ministry of Munitions and the Board of Trade so as to secure if possible additional material and labour in order to augment the present tramway service.

Children's Fares.—The Manchester Education Committee is bringing the question of fares of children attending the secondary schools in the city before the Manchester Tramways Committee. Under the new scale of fares certain children will have to pay sixpence or eightpence a week more compared with the old fares, and in one case it is reported the increase has amounted to two shillings.

London Passenger Services were greatly interfered with by fog on Thursday evening. Trains on the District Railway from the City to Ealing were in some cases delayed four hours. An accident at West Brompton increased the difficulties, and Wimbledon trains were much delayed. The services on the London United tramways on certain routes were abandoned after 9.30 p.m. Some cars had taken six hours to go from Hammersmith to Hampton Court, and four and a half hours to Hounslow. Mr. Blake, traffic superintendent of the District Railway, stated that it was the worst fog they had ever had to contend with. By morning the air was comparatively clear.

Tramways and Light Railways Association.—The Official Journal for January contains a copy of the Order in Council conferring powers on the Board of Trade under which the Tramway Committee has been set up; the decision of Sir George Askwith given on January 7 with reference to munitions bonus; the list of Bills deposited in Parliament for the session of 1918, and other items.

Discontinuance of a Halifax Route.—Halifax Tramways Committee has reconsidered the question of discontinuing the circular route *via* King's Cross and Gibbet Street. An effort was made by various persons in the districts concerned, including munition workers, to persuade the Committee to continue the service, but after considering the question in all its bearings, the Committee agreed that the original decision must be carried out.

The Melbourne Age reports that the electrification of the Melbourne suburban lines has now reached a stage where provision of a small amount of plant will allow electric trains to run on the Sandringham and Essendon line, and a further addition of the equipment will place the Williamstown, St. Kilda and Port Melbourne lines in commission. Much of the overhead work is described as complete. Many sub-stations are built and cars are being equipped at the Jolimont car sheds.

Horse Electrocuted.—On the Dundee and Broughty Ferry tramways on January 27, a horse was electrocuted. It appears that on the Belsize Road route an electric trolley wire had been broken and both ends lay on the road. Inspector Gordon, of the Dundee City Police, who was on duty regulating the passing traffic, shouted to the driver of an approaching dogcart to stop, but he drove on, and the horse came in contact with the wire and was instantly killed. The occupants of the trap were thrown out, and one of them received a slight shock from the live wire.

Difficulties at Paisley.—The Paisley tramway service has not yet recovered from the result of the recent severe weather, when many cars were put out of service owing to the motor equipments being damaged by the salted sludge. Last Saturday only 45 out of 57 cars could be turned out. As a consequence, the employees in some of the controlled establishments and munition works had to walk. Appeals have been made from public works in the district to the Admiralty and the munition works for assistance in facilitating the transport of workers.

Medical Examination of Tramcar Drivers.—The Railway Department of the Board of Trade has suggested that in connection with the circumstances of the serious accident which occurred on the Dover Corporation tramways on August 19 last, in which case the motorman concerned had been discharged from the Army as unfit for military duties owing to nervous breakdown, medical examination of men offering themselves as tramcar drivers is desirable when there is a possibility that they have been suffering from shell shock or similar nervous complaints.

Ashton Tramways.—Ashton Town Council is applying to the Board of Trade for an Order extending for one year the period during which the Council are entitled to purchase that part of the undertaking in the borough belonging to the Oldham, Ashton, and Hyde Electric Tramways Co., Ltd. The company's lease of twenty-one years has now expired. Alderman Oldham said the Corporation had not been able to come to terms with the company for the purchase of the tramways, and to protect themselves it was necessary that the Board of Trade's Order should be obtained.

Southport Tramways.—The General Purposes Committee of Southport Town Council has decided to purchase the undertaking of the Southport and Birkdale Tramways Company for £35,000 as from 1st inst. The terms agreed upon, as previously reported, include a payment of £1,200 to the corporation on revenue account, in addition to rent outstanding at the end of last year, and the deferment of the purchase money at the corporation's option until July, 1922, or earlier, in order to get over the difficulty of raising a loan during the war. It is reported that shortly after the purchase is completed there will be an all-round increase in fares to the amount of fifty per cent.

A Straight-Away Solution.—Tramways in the London area were troubled a good deal by motor omnibus competition before the war, and quite likely they will be troubled by it again. Their operators, however, cannot hope for the drastic method of cure proposed by Mr. Adam Shortt, Ottawa, who was appointed a special commissioner to investigate the economic conditions of the British Columbia Electric Railway. One of his findings is that the railway service cannot be maintained efficiently under the present condition of competition with jitneys. [Jitneys are automobile public service vehicles of any sort.] The jitney therefore should be eliminated, for it cannot meet transportation requirements.

Improved Traffic Regulations in London.—Certain new regulations came into force on the London County Council tramways on January 28 which should make for more expeditious handling of the traffic. One refers to change points for transfer ticket holders to and from the tramway subway. Passengers from the subway will change at Waterloo Bridge, and those to the subway, from Westminster Bridge, must change at the point opposite Westminster Station where the single-deck cars cross over for the return journey. To meet the congestion of traffic at the Victoria tramway terminus in Vauxhall Bridge Road during the rush period every evening and after twelve noon on Saturdays, passengers will leave the cars by the front platforms after the cars have passed the new cross-over which has just been completed. An appeal is made to the public to co-operate with the tramway officials by conforming to the new regulation which has been designed with a view to improving the conditions at Victoria which were fast becoming most dangerous.

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Scarcity of Houses.—The scarcity of housing accommodation which is so pronounced in many districts is sometimes a cause of difficulty in getting men for tramway work. An example comes from Pontypridd, where Mr. J. E. Teasdel, the manager, reported to the Tramways Committee that owing to the difficulty of securing houses the department was unable to obtain the services of men badly needed. As a result of advertising, he had received seventeen applications, but of these only five started. This was principally due to the fact that the others could not secure houses in the district. Four excellent men had been lost by the department during the year through this cause. The Chairman (Mr. Moses Jones) said that about five hundred new houses were required in the town.

Repair of Glasgow Car Motors.—The Glasgow tramways department has been engaged in the heroic task of restoring to efficiency as rapidly as possible the several hundreds of car motors which were put out of action when the thaw came at the end of the great January snowstorm. By strenuous work at Coplawhill shops the department are steadily restoring the cars to their proper condition. At the beginning of this week there were, however, about 200 cars still to repair, and the work will not be finished for a fortnight. The reduced service due to the number of cars disabled has had its effect on the weekly receipts, which for the week ended January 26 amounted to £24,081. This was fully £2,000 better than in the previous week, but is still short of the recent average before the snowstorm. It is expected that the receipts this week will show a considerable improvement.

Industrial Reconstruction.—The inaugural meeting of the Industrial Reconstruction Council will be held in the Guildhall, London, on February 15, with the Lord Mayor in the chair. Dr. Addison Minister of Reconstruction, Mr. G. H. Roberts, Minister of Labour, Lord Burnham, Mr. J. H. Whitley, who was chairman of the Committee which produced the famous report, and others will speak. This is the first of a series of important meetings which the Reconstruction Council is arranging with the object of focussing public attention on the tremendous industrial problems that will arise at the end of the war. The Council has for its purpose the awakening of national interest to the need for a complete system of industrial self-government. It desires to popularise this principle, and in particular to spread a knowledge of the recommendations of the Whitley report.

Labour View of Modern Transit.—In a statement presented to the President of the Local Government Board by the London Labour Party it is remarked that " with the coming of the electric tramway and other modern forms of passenger transit there has occurred an opening up of residential districts, both working and middle-class in character. This housing development has taken place under the old by-laws, with results that can only be called tragic." The Executive Committee urges the President of the Board to convene a conference of London authorities with the object of promoting " co-operation in framing town planning and housing schemes in London's outer ring, so that garden cities may be erected, each with its well-ordered local industries, which will make possible the abolition of that waste of two or three hours spent by the mass of London workpeople in getting to and from their work."

Yorkshire Tramway Managers' Association.—A meeting of Yorkshire Tramway Managers was held in Leeds on Thursday, January 24, 1918. The members lunched together at the Queen's Hotel, and afterwards adjourned to the Tramways Offices. The following members were present:—Messrs. J. V. Moinett (Scarborough), J. Galloway (Halifax), T. Stirk (Bradford), W. Browne (Mexborough), W. E. Nicoll (Barnsley), H. L. White (Grimsby), E. A. Paris (Dewsbury), W. McGibbon (Ossett), R. H. Wilkinson (Huddersfield), A. Daggett (Leeds), and H. England (Wakefield). The chief business was the question of the demand for a war wage or bonus of £1 per week made by the Union. Several members expressed strong views on this matter, and the Secretary was requested to take steps to have the case presented to the arbitrator at the Conference. Several other matters of interest to managers were introduced and discussed.

Free Passes for a Tramway Committee.—The minutes of the Tramways Committee submitted to the Leicester Town Council on January 29 included a resolution that " each member of the Committee be supplied with a free pass on the tramway cars, and be authorised to ring on and off when travelling on crowded cars, and to give what assistance is necessary." It is stated that only three members of the Committee, including the Chairman, voted against the resolution. At the Council meeting Alderman Banton, who submitted the report in the absence of Alderman Flint, the chairman, asked permission to withdraw the resolution. He had, he said, a very good case to make out in regard to the powers sought for the individual members of the Committee to assist when the traffic was congested. They were all aware that at times the conductors and conductresses were overworked, and the consequence was that many fares were lost, while accidents occurred through the conductors being unable to be on the rear platforms at the time of starting and stopping. Alderman Banton went on to say that the idea was to make the members of the Committee as useful as possible in cases of this kind, when the Mayor said he thought he could say with safety that the Council would very graciously consent to the Committee withdrawing the proposal. After some discussion the Council agreed, with one dissentient, to the Mayor's suggestion. The *Leicester Daily Mercury*, in commenting on the proposal, inquired " Why should not members of other committees receive an equivalent consideration ? The Gas Committee, for example, might have free gas, and the Water Committee free water."

Tramway Employment for Discharged Soldiers.—Sir A. Geddes, replying to a question in the House of Commons on Thursday, stated that discharged soldiers engaged in any one of a number of occupations which he specified, would be regarded as undertaking work of national importance. Among the occupations which he mentioned were tramways and railways.

Llandudno Trouble.—The question at issue between Llandudno Council and Llandudno and Colwyn Bay Electric Railway Company is still a subject of discussion locally, and it may be hoped that an arrangement will yet be come to. The company buy energy for working their line from the Council, and the latter have decided to terminate the agreement if terms cannot be settled before the end of twelve months. The termination of the supply would mean the stoppage of the working of the tramway, unless the company should be able to make some other arrangement. It appears that the company have offered to increase the price paid for current, provided that the Council sanction the running of the cars on Sundays. There is a strong feeling in the Council against the latter course, as the Welsh Sabbatarian element is concerned. At the same time it has been pointed out that the railway company is the only paying customer which the Council have.

Reckless Driving by Military Men.—There have been many complaints of military motor vehicles being driven at excessive speeds on British highways, and in some cases prosecutions have taken place. An example of the sort of thing which sometimes happens was given in the course of a charge at Kingston-on-Thames Police Court, on January 28, against Private C. Tillman, a Canadian, of driving a motor car to the danger of the public. Lieut.-Colonel C. Macalpine, director of supply transport, Canadian Headquarters, Staff, was charged with aiding and abetting. On behalf of the Commissioner of Police it was stated that Tillman drove on the Portsmouth Road at just under forty-eight miles an hour, and when stopped, Colonel Macalpine produced a War Office pass. This allowed him to exceed the limit, but not to drive to the danger of the public, which forty-eight miles an hour must be on the highway, for it was the speed of an express train. The Bench bound over both Colonel Macalpine and Tillman in £20 to come up when called upon.

Tramway Employees at Walthamstow.—Mr. William Murray, manager of Walthamstow Council tramways, in his report for the year ended March 31 last, pays a high tribute both to the men and women employees. He expresses his highest appreciation of the way in which the men have stuck to their work during the past two and a half years. The motormen were called upon to work seven days a week practically throughout the whole of the year. In many cases men who had finished their normal day's work returned after a brief interval to take extra cars out in the evenings. None of the motormen received their annual holidays. Mr. Murray commends also the women conductors, who have rendered " splendid service." Although when he first recommended their employment much misgiving was felt, it is the general opinion to-day that they are a credit to the department. While not anxious to take the responsibility of introducing women drivers, Mr. Murray says that should the need arise, he would have no hesitation in recommending the Council to employ women in that capacity, in view of the experience in other towns. Women cleaners were first employed by the department in September, 1916. Male cleaners work during the night, sweep out the cars, wash the trucks and generally do the heavy work. The women cleaners come at 9 a.m. and work eight hours, ceasing at 6 p.m. They are responsible for cleaning the windows, brass work, canopies, seats, etc. Mr. Murray reports that their work has been quite satisfactory.

PERSONAL.

Mr. L. Woodman, electrical engineer of the Dover Electricity Committee, has been granted an increase in salary from £425 to £500 per annum.

Mr. T. Evans, of Walthamstow, has been appointed traffic superintendent of the Walthamstow Urban District Council Light Railways at a salary of £150 per annum without war bonus, with a maximum of £200 per annum.

Corporal V. Vidler, R.E., formerly on the staff of the Hastings Tramway Company, has been awarded the Military Medal for gallant work in Italy.

Alderman C. F. Spencer, chairman of the Halifax Tramways Committee, commenced his duties on January 28 as director of the Central Kitchens Division of the Ministry of Food. It is understood that the provision of travelling kitchens to be run on the tramways to ensure rapid distribution is part of the contemplated scheme.

Mr. G. W. Holford, general manager of Salford Corporation Tramways, is to act as assistant to Alderman Spencer. The Mayor of Salford has received a communication from Lord Rhondda, asking for the transfer of the services of Mr. Holford to the Ministry of Food.

Mr. George J. Gibson, traffic manager of the Manchester, Sheffield and Nottingham section of the Great Central Railway, has been appointed Director of Railway Transport under the Ministry of Food. Mr. Gibson has been with the Great Central Railway Company for fourteen years, and before that he was in the service of the London and South Western Railway. While Major Clow, superintendent of the line of the Great Central Railway was absent in France last year on special duty, Mr. Gibson acted as superintendent.

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FINANCIAL REPORTS AND MEETINGS.

Greenwood and Batley, Ltd., have declared an interim dividend of 7½ per cent., tax free, on the ordinary shares.

City of Buenos Ayres Trams.—The directors of the City of Buenos Ayres Tramways Company (1904) recommend a balance dividend of 1s. 3d. per share for the year ended December 31, making 5 per cent. per annum, less tax; that £5,600 be transferred to the general amortisation fund, and £70 be carried forward.

Loss on Stalybridge Tramways. The Stalybridge, Hyde, Mossley and Dukinfield Tramways and Electricity Board have decided that a sum of £5,000 will be necessary to meet the deficit on the tramways, and this amount will be levied in sums of £1,250 from each of the four Corporations concerned.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended January 30 amounted to £53,779, an increase of £10,503, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to January 30 (forty-three and a half weeks) the total receipts were £2,402,370, an increase of £326,257, on the corresponding period of 1917.

Walthamstow Council Tramways.—The manager, Mr. William Murray, in his report for the year ended March 31 last, alludes to the change in fares and fare stages which came into operation on April 3, 1916, and involved the abolition of the halfpenny stages. The Council have always endeavoured to give the cheapest travelling facilities possible, and at the same time have striven by the strictest economy to make the department self-supporting. They had succeeded in this effort in the years 1910, 1911, and 1912, when the advent of the motor omnibus gave a set-back and rendered necessary some change if the department was to pay its way. After long discussion they finally decided to abolish halfpenny fares for adult passengers, to discontinue cheap return tickets, and to increase the price of workmen's tickets by 50 per cent. The changes have been amply justified by results. The traffic revenue for the past year increased by £9,518, and the net balance was £7,254 as compared with £816 for the previous twelve months. Mr. Murray remarks that Walthamstow gave a lead to other tramway-owning authorities, and now their near neighbours, including Leyton, West Ham, East Ham, and the London County Council have followed their example. The receipts for the past year amounted to £55,775, an increase of £9,896, while the average total revenue per car mile was 11·85d. an increase of 1·44d. per car mile. The working expenses, including power costs, was 7·82d. The number of passengers carried was 12,367,778, a decrease of 2,320,685. The power consumption averaged 1·34 units per car mile, as compared with 1·36 units during the previous twelve months. The charge for electricity was 1·415d. per unit, as compared with 1·394d. per unit last year. The average of working expenses to receipts was 66·02. The payments to dependents of men serving with the colours amounted to £1,794, and in addition a sum of £800 was paid in war bonuses to members of the staff. Up to March 31, 1917, seventy-six of the staff had enlisted, and forty-two had taken up munition work. Six have been discharged from the Army because of wounds and have resumed their service in the department. The staff on the books of the department at the close of the year was 210. Mr. Murray says it is a source of much gratification that in the midst of a great deal of unrest in the labour world the tramway staff had displayed the utmost loyalty to the tramway department, and had worked most strenuously in its service. The monetary concessions so readily granted by the Council showed that the attitude of the men was much appreciated.

Institution of Automobile Engineers.—The fifth ordinary general meeting of the Institution of Automobile Engineers will be held at the Royal Society of Arts, John Street, Adelphi, W.C.2, on Wednesday, February 13, 1918, at 8 p.m., when Mr. Ernest A. Savage will read a paper entitled "The Utilisation of the Data of the Automobile Industry through Bureaux of Information." Cards of invitation to the meeting can be obtained on application to the Secretary of the Institution of Automobile Engineers, 28, Victoria Street, Westminster, S.W.1.

Edinburgh Tramways.—The *Edinburgh Evening Dispatch*, alluding to the passing of the dividend by the Edinburgh and District Tramways Company, says that the public will not grudge a small modicum of sympathy to the shareholders. "After the long run of lean years, or, to be more accurate, skeleton years, they deserve the fat years that succeeded, and to have fallen upon bad times when the lease is drawing to a close is an unpleasant experience. In view of the bargain that has been made with the Town Council, however, it is satisfactory to reflect that there is not much risk that anyone interested in the concern will in the end prove a loser."

CONTRACTS AND ORDERS.

West Ham Town Council has approved an arrangement with Messrs. Brunner, Mond & Co. for five years' contract for alkali for the water-softener at the generating station.

Frederick Smith & Co., Ltd., Anaconda Works, Salford, have received an order from Glasgow Corporation for trolley wire. The address of the firm was by inadvertence given incorrectly in our last issue.

POSITIONS VACANT.

TICKET INSPECTOR.

Ticket Inspector required for Motor Omnibus Service, age 25 to 45; ineligible for the Army, and not employed on Government work State age, experience and wages required. Permanent position to suitable man. Applicants must have had previous experience with omnibus or tramway services.—Apply

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The Aldershot & District Traction Co., Ltd.
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CITY OF BIRMINGHAM.

Tramways Department.

Appointment of Works Superintendent.

The Tramways Committee are desirous of receiving applications from fully qualified Mechanical and Electrical Engineers for the position of Workshop Superintendent at their Kyotts Lake Road Works.

Candidates must have had good experience in workshop practice.

The commencing salary will be £400 per annum, rising to £500 on approved service.

If less than 45 years of age, the successful candidate will be required to contribute to the Birmingham Superannuation Scheme.

Applications, with copies of not more than three testimonials, must reach the undersigned not later than 5th day of February, 1918.

ALFRED BAKER,
General Manager.

Tramways Department,
Council House, Birmingham.
January 15, 1918.

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Particular attention is directed to a chapter on Depreciation and Controlled Establishments under the Munitions of War Act, 1915; and it may be added that the views of the Ministry of Munitions as to the proper treatment of Depreciation of Plant coincide with the views advocated in this work.

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash Jan. 31 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	71⅜	71½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅞	57/6	55/–
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4⅛	49/9	49/9
4%	4%	Do. 4% Deb.	100	91	68⅛	68⅛
4⅛%	4⅛%	Do. 4⅛% Deb.	100	98½	68⅛	68
5%	5%	Do. 5% Deb.	100	96	67	65½
—	—	Associated Omnibus Co., Ord. ..	5/–		1/1⅛	1/3
7d.	1/–	Auckland Elec. Trams. Ord. ..	1	1	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	100	100⅛
—	1/–	Bath Electric Trams Pref. Ord.	1	¼	3/–	4/–
6d.	6d.	Do. 5% Cum. Pref. ..	1		10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	70	70
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
14/–*	20/–*	Bombay Elec. Sup. & Tram Ord.	10	14	20¼	20¼
6/–	6/–	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11⅛	9¼	9¼
4½%	4½%	Do. 4½% Deb.	100	96	75	75
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	44¼	45¼
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	89½	89
4/–	4/–	Brisbane Elec. Trams. Ord. ..	5	7½	5⅝	£5/0/0
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	77/6	77/6
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	90½	90½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	29½	29½
6%	5%	Do. Pref. Ord.	100	106	29½	29
5%	5%	Do. 5% Cum. Pref. ..	100	103	45	45
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	84½	84½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	59½	58
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	31½	32½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	72½	73
5%	5%	Do. 5% Deb.	100	92	78	77½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	72½	72½
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6⅛	6⅛
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	81/3	81/3
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	72½	72½
1/–*	1/–*	Cape Elec. Trams.	1		12/3	12/3
1/3	1/3	City of B. A. Trams	5	5½	83/9	83/9
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	85	85
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	80½	80½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
5/–	4/–	Dublin United Trams. Ord. ..	10	8	7½	7½
6/–	6/–	Do. 6% Pref.	10	12	11	10⅝
—	—	Hastings & Dis. Elec. Tram Ord.	10/–		1/1½	1/1½
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1		10/4½	10/4½
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
1/1½	5½d.	Hong Kong Tramway	5/–		17/9	17/1½
5%	5%	Do. 5% Deb. ..	100	87½	80½	80½
2/6	3/–	Isle of Thanet 5% Pref. ..	5	2½	10/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	¾	2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co. ..	10	10½	9⅞	9⅞
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79½
9¾d.*	9¾d.*	Llandudno & Colwyn B. Ord. ..	1	—	10/–	10/–
—	1½d.	London & Sub. Traction Ord. ..	1		2/3½	2/3½
6d.	6d.	Do. 5% Pref.	1		6/3	6/3
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	62½	62½
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80½	79½
5%	5%	Do. 5% Inc. Deb... ..	100	88½	79	79
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	37½	36½
3/–	3/–	Madras Elec. 6% Pref. ..	5	5	85/–	85/–
5%	5%	Do. 5% Deb.	100	100	87½	87½
7½d.%*	9¾d.*	Manaos Trams & Ltg. Ord. ..	1		3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	71	71
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	72½	72½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70	70
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	28½	29
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	39	39
—	—	Do. 6% Mt. Bds. ..	100	76	25½	25½
4½%	4½%	Montreal St. 4½% Stg. Dbs. ..	100	100	91½	91½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/–	1/2½*	National Steam Car	1		17/3	17/9
9¾d.*	9¾d.*	New General Traction	1	½	7/3	7/3
8¾d.	6d.	Northern Gen. Trans. Ord. ..	1		12/9½	12/9½
6/–*	3/–	Para Elec. Rlys. Ord.	5	4½	79/4½	79/4½
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	5/10½	7/7½
—	—	Do. 7% Non. Cm. Part Pf.	1	—	12/7½	12/6
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8¾d.*	Potteries Elec. Trac. Ord. ..	1		6/9	6/9
6d.	6d.	Do. 5% Pref.	1		12/–	12/–
8d.	1/4	Provincial Trams. Ord. ..	1		20/3	20/3
3/–	3/–	Rangoon Tram. 6% Cum. Pref.	5	5½	88/9	88/9
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	81	81
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	86½	86
5*	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	76	75
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	88½	86½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	75	75
12/–	10/–	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/–	¼	4/7	4/7
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	88	88
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	91½	91½
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77⅛	77⅛
2/–	2/–	Un'd. El. Tr. Monte Video Ord.	5	4½	31/3	31/3
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	66	66
—	—	Yorks (W.R.) Elec. Trams. Ord.	5		18/4½	18/4½
3/–	3/–	Do. 6% Cum. Pref. ..	5		84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	76½	76½
—	—	Metropolitan Dist. Ord. ..	100	21½	15⅞	15½
—	—	Undgd. Elec. Rys. of London ..	10	21½	36/3	35/–
		Do. "A"	1/–		5/–	5/0½
4½%	4½%	Do. 4½% Bds. of 1933 Rd. ..	—	99	102½	102½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	101½	102
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	82	81½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1916-17	Latest Return. 1917-18	Latest Return. Incr. or Dec.	Aggregate. Wks.	Aggregate. 1917-18	Aggregate. Incr. or Dec.
Aberdare U.D.C. ..	Jan. 22	365	453	+ 88	42	18,947	+ 1,881
Aberdeen Corporation ..	,, 23	1,718	2,050	+ 332	34	73,651	+ 8,422
Ayr Corporation ..	,, 26	246	319	+ 73	37	18,527	+ 2,152
Belfast City	,, 25	5,247	7,231	+ 1,984	43	282,769	+ 37,431
Birkenhead Corporation	,, 27	1,394	1,934	+ 540	43½	79,443	+ 12,810
Birmingham Corporation	,, 19	16,013	18,876	+ 2,863	42	777,184	+ 108,052
do. Motor Omnibuses ..	,, 19	888	1,071	+ 183	42	44,674	+ 3,114
Blackburn Corporation ..	,, 16	1,053	1,245	+ 192	42⅔	62,944	+ 10,247
Blackpool & Fleetwood ..	Dec. 31	445	716	+ 271	51⅔	44,164	+ 1,148
Bournemouth Corporation	Jan. 30	1,627	2,396	+ 769	43⅔	111,067	+ 11,589
Bradford Corporation ..	,, 19	5,966	6,588	+ 622	42	322,291	+ 35,960
Burnley Corporation ..	,, 26	1,476	2,060	+ 584	..	..	..
Burton-on-Trent Cor. ..	,, 27	264	370	+ 106	43	12,763	+ 1,696
Bury Corporation ..	,, 27	1,214	1,591	+ 377	43½	70,749	+ 9,242
Chatham & District ..	,, 17	1,065	1,057	— 8	3	2,530	— 259
Cork Electric	,, 17	421	531	+ 110	3	1,257	+ 93
Derby Corporation ..	,, 26	965	1,245	+ 280	43	52,365	+ 3,849
Dublin United	,, 18	5,875	6,842	+ 967	3	17,848	+ 1,910
Dundee City	,, 23	1,268	1,485	+ 217	36½	56,343	+ 5,788
East Ham Corporation ..	,, 26	1,176	1,311	+ 135	43	58,965	+ 3,573
Exeter Corporation ..	,, 25	304	366	+ 62	43	17,199	— 116
Glasgow Corporation ..	,, 26	22,731	24,081	+ 1,350	34⅔	905,909	+ 99,724
Glossop (U.E. Sup. Co.) ..	,, 26	122	177	+ 55	4	688	+ 167
Halifax Corporation ..	,, 22	1,791	2,024	+ 233	42⅔	103,989	+ 10,019
do. Motor Buses ..	,, 22	45	47	+ 2	42⅔	2,087	— 23
Hastings and District ..	,, 28	832	1,004	+ 172	4	3,616	— 96
Huddersfield Corporation	,, 26	2,506	3,239	+ 733	43	137,493	+ 15,834
Ilford U.D. Council ..	,, 26	555	781	+ 226	43	32,870	+ 3,980
Ipswich Corporation ..	,, 26	352	579	+ 227	43	28,770	+ 7,167
Isle of Thanet ..	,, 26	204	197	— 7	17	2,829	— 1,525
Kilmarnock Corporation	,, 26	150	219	+ 69	36½	7,490	+ 1,013
Lanarkshire	,, 17	2,233	2,450	+ 217	3	7,436	+ 777
Lancashire United ..	,, 23	1,697	2,449	+ 752	4	7,783	+ 1,846
Leeds City	,, 26	9,038	11,057	+ 2,019	43	474,997	+ 53,330
Leicester Corporation ..	,, 19	3,190	4,256	+ 1,066	..	..	..
Leyton U.D. Council ..	,, 24	1,492	1,667	+ 175	43	80,142	+ 11,034
Liverpool Corporation ..	,, 12	14,331	15,717	+ 1,386	13	28,037	+ 2,279
Llandudno & Colwyn Bay	,, 18	180	202	+ 22	7	1,569	+ 167
London County Council	,, 30	43,276	53,779	+ 10,503	43½	2,402,370	+ 326,257
Maidstone Corporation ..	,, 24	170	247	+ 77	43	10,554	+ 1,227
Manchester Corporation	,, 26	17,631	23,382	+ 5,751	43	901,612	+ 95,943
Nelson Corporation ..	,, 26	188	244	+ 56	43	10,125	+ 981
Newcastle-on-Tyne Cor.	,, 26	6,711	8,312	+ 1,601	43	338,983	+ 49,820
New St. Helens & Dist. ..	,, 23	946	1,222	+ 276	30	42,116	+ 9,637
Northampton Cor. ..	,, 25	662	879	+ 217	43	36,206	+ 5,130
Nottingham Corporation	,, 24	3,613	5,061	+ 1,448	43	162,016	+ 24,389
Oldham Corporation ..	,, 27	2,081	2,913	+ 832	44	124,010	+ 16,910
Portsmouth Corporation	,, 26	1,827	2,634	+ 807	..	..	..
Provincial	,, 26	1,750	2,479	+ 729	16⅔	39,274	+ 5,569
Reading Corporation ..	,, 24	773	1,140	+ 367	43	45,531	+ 8,567
Rhondda Tramways ..	,, 17	1,325	1,331	+ 6	3	3,367	+ 140
Rotherham Corporation	,, 30	1,577	2,055	+ 478	44⅓	79,531	+ 11,331
Salford Corporation ..	,, 28	5,028	6,947	+ 1,919	43⅔	286,678	+ 52,190
Sheffield Corporation ..	,, 27	10,559	13,167	+ 2,608	44	532,697	+ 67,309
Southampton Cor.	,, 23	1,487	2,239	+ 752	41⅔	88,235	+ 16,551
Southend-on-Sea Cor. ..	,, 23	585	657	+ 72	43	38,219	+ 1,017
South Shields Cor. ..	,, 19	792	953	+ 161	42	40,346	+ 4,837
Sunderland Corporation ..	,, 27	1,558	2,113	+ 555	43	79,844	+ 8,288
Sunderland District ..	,, 10	762	726	— 36	10	4,382	+ 806
Swindon Corporation	,, 23	196	284	+ 88	42⅓	11,636	+ 2,801
Torquay Tramways ..	,, 17	482	588	+ 106	3	1,500	+ 247
Tyneside Trys. & Trmrds.	,, 16	576	705	+ 128	3	1,695	+ 251
Wallasey Corporation ..	,, 26	1,109	1,445	+ 336	43⅔	67,670	+ 9,899
Walsall Corporation ..	,, 26	701	1,076	+ 375	43	42,931	+ 7,494
Walthamstow U.D. Coun.	,, 26	881	1,188	+ 307	43	52,651	+ 6,177
Warrington Corporation	,, 17	497	709	+ 212	42	24,508	+ 3,477
West Ham Corporation	,, 24	3,121	3,769	+ 648	42⅔	156,515	+ 19,046
Wigan Corporation ..	,, 24	1,635	2,229	+ 594	43	87,240	+ 14,484
Yorkshire (West Riding)	,, 28	1,744	2,410	+ 666	4	8,917	+ 1,871

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War :—Accrington, Bath, Blackpool, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	Latest Return. 1917-18	Aggregate. Wks.	Aggregate. 1917-18	Aggregate. Increase or Dec.
Anglo-Argentine	Jan. 28	£48,956	£49,151	4	£209,415	+ £10,466
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Nov.	3,430	3,552	32	25,665	+ 125
Brazilian Traction (Mlrs.)	Nov.	7,160,000	7,695,000	47	84,131,000	+ 6,558,000
Brisbane	Dec.	32,910	35,019	52	396,339	+ 6,269
British Columbia .. $	Nov.	472,767	525,629	21	2,368,105	+ 199,679
Buenos Aires Lacroze ..	Dec.	40,106	40,901	26	230,476	— 419
Burmah Tram. & Light Rs.	Dec.	32,551	26,224	21	135,822	— 1,483
Calcutta .. .. Rs.	Jan. 19	73,899	74,579	3	206,118	+ 3,784
Cape Town	Dec.	..	19,803	..	..	..
Carthagena and Herrerias	Dec.	2,399	4,424	52	49,566	+ 19,776
Cordoba	Nov.	12,836	13,339	34	108,715	— 2,137
East India	Dec.	2,120	1,099	22	6,273	— 4,914
Hong Kong .. .. $	Dec 1	12,173	12,561	48	647,597	— 38,825
Kalgoorlie	Aug.	3,021	2,911	34	21,065	+ 586
La Plata	Dec.	4,437	4,606	52	48,963	— 1,874
Lima	Dec.	37,171	41,697	52	438,895	+ 30,725
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Jan. 15	36, 493	37,736	2	37,736	+ 1,243
Manila .. .. $	June	59,432	73,900	..	..	..
Manaos	Oct.	..	158,078	..	..	..
Montevideo	Dec.	31,364	34,025	8	65,085	+ 5,317
Pernambuco	Jan. 13	3,655	4,651	2	9,370	+ 2,165
Peruvian .. .. $	Dec.	990,842	1,101,090	26	6,088,270	+ 582,778
Port Elizabeth	Dec.	..	4,920	..	..	..
Rangoon	Dec.	4,904	5,438	52	60,817	+ 2,500
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Dec. 15	13,297	12,548	50	643,405	+ 11,654
Toronto .. .. $	Nov.	911,829	1,052,000	47	10,986,998	+ 1,161,954
Winnipeg .. .. $	Nov.	282,899	305,881	47	3,039,397	+ 16,227

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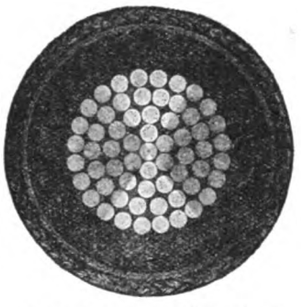
1837.  1918.

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Portsdown & Horndean Light Railway Co.
Wakefield & District Light Railway
Londonderry Tramways Company
Calcutta Tramways Company, Ltd.
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Burton-on-Trent Corporation Tramways
Scarborough Electric Tramways Co., Ltd.
Aberdeen Suburban Tramways Co.
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Hastings & District Electric Tramways Co., Ltd.
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Plymouth Tramways
Gloucester Corporation Light Railways
Ilkeston Corporation Tramways
Stockport Corporation Tramways
Accrington Corporation Tramways
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BIRMINGHAM—147, Corporation Street.
LEEDS—Standard Assurance Buildings, City Square.
NEWCASTLE-ON-TYNE—50, Grey Street.

TRAMWAY TRACK CONSTRUCTION AND MAINTENANCE.

By R. BICKERSTAFFE HOLT,
Highways and Permanent Way Engineer, City of Leeds.

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Defective rails—Composition of rails—Standard specification—Basic and acid Bessemer process—Sandberg process—Analysis of rails and rail tests—Drop test unnecessary.

CHAPTER XI.—CORROSION OF TRAMWAY RAILS.
Causes of rail corrosion—Exposure to sea water—Effect of corrosive liquid.

CHAPTER XII.—TRACK PAVING.
Effect of vehicular traffic—Cause of loose rails—Importance of quality in setts—Square-dressed setts—Nidged granite setts—Bonawe granite setts—Wood paving—Bedding of setts—Laying and ramming.

CHAPTER XIII.—RECONSTRUCTION.
Removal of tracks—Temporary tracks.

CHAPTER XIV.—SURFACE DRAINAGE AND RAIL MAINTENANCE.
Rail cleaning—Rail grinding—Rail planing.

CHAPTER XV.—SPECIAL TRACK WORK.
Design and standardisation of points—Unbroken main line crossings—Renewable plates—Switches—Mechanism for movable points—Heel pins—Tongue heel adjusters—Guard rails—Spiral tables for curves and junctions—Special track problems.

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THE

Tramway & Railway World

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

COUNTY BOROUGH OF NEWPORT.

Electricity Department.

The Corporation invite Tenders for the following:—

Section 1. 3,000 kw. Turbo-Alternator.

Section 2. Surface Condensing Plant for 3,000 kw. Turbo-Alternator.

Form of tender and contract, specification and drawings, and any further information may be obtained on application to A. Nichols Moore, M.I.E.E., Borough Electrical and Tramways Engineer, Town Hall, Newport, Mon., on payment of five guineas for each section, which deposit will only be refunded on receipt of a *bona-fide* tender. Further copies can be had on payment of 15s. 6d. each, which is not returnable.

Tenders must be enclosed in a sealed cover provided, and addressed to the Town Clerk, Town Hall, Newport, Mon., and endorsed in the left-hand corner, "Tender for Plant," Section 1 or 2, as the case may be, and delivered at my office by hand or through the post (registered) not later than 10 a.m. on February 18, 1918.

The Corporation do not bind themselves to accept the lowest or any tender.

ALBERT A. NEWMAN,
Town Clerk.

Town Hall, Newport, Mon.
January 28, 1918.

LONDON COUNTY COUNCIL.

Tenders are invited for the supply of 4,500 forged steel driving wheel tyres and 3,000 forged steel trailing wheel tyres for electric tramcars. The form of tender may be obtained from the General Manager, London County Council Tramways, 23, Belvedere Road, Lambeth, S.E.1. No tender received at the County Hall, Spring Gardens, S.W., after 4 p.m. on Monday, February 18, 1918, will be considered. The Council does not bind itself to accept any tender.

JAMES BIRD.
Clerk of the London County Council.

COUNTY BOROUGH OF WARRINGTON.

Electricity Department.

The Electricity and Tramways Committee of the County Borough of Warrington invite Tenders for Steam Pipe Work.

Specification and form of Tender can be obtained from the undersigned on payment of One Guinea.

Five shillings will be charged for extra copies of the specification.

Tenders, addressed to the Chairman of the Electricity and Tramways Committee, Town Hall, Warrington, must be sealed with wax, and endorsed "Tender for Steam Pipework," and delivered not later than 12 o'clock noon on Tuesday, February 26, 1918.

The lowest or any Tender will not necessarily be accepted.

F. V. MATHIAS,
Borough Electrical and Tramways Engineer.

Howley,
Warrington.

POSITION VACANT.

Wanted, Man capable of re-winding and repairing Brush and B.T.H. tramway armatures; good wages to capable man.—Apply, stating age, wages, enclosing references, to GENERAL MANAGER, Mexborough and Swinton Tramways Co., Electricity Works, Dale Road, Rawmarsh.

POSITIONS VACANT.

LIVERPOOL CORPORATION TRAMWAYS.

Deputy General Manager.

The Council of the City of Liverpool invite applications for the appointment of Deputy General Manager of the Tramways Undertaking.

The person to be appointed must possess expert knowledge of traffic management, and also have engineering experience in all branches of work connected with the building and maintenance of electrical tramway rolling stock and overhead equipment. He will be required to devote his whole time and attention to the duties of the office, and will be prohibited from engaging in any other business or employment whatever.

Salary £800 per annum; the engagement to be determinable by three calendar months' notice, to expire on the last day of any calendar month, and to be subject (if the Council so determine) to the Superannuation provisions of the Liverpool Corporation Act, 1913.

The person appointed will be required to sign an agreement to the effect that he holds the office subject to compliance by him with the Standing Orders of the Council.

A statement of the principal duties of the position will be forwarded upon application to the General Manager of the Liverpool Corporation Tramways, 24, Hatton Garden, Liverpool.

Applications, stating age, qualifications, and previous appointments, accompanied by copies of not more than three testimonials, and endorsed "Deputy General Manager," must be sent to the Town Clerk, Municipal Offices, Liverpool, not later than 5 o'clock on the 25th February, 1918.

Canvassing of Members of the Council will be a disqualification, but candidates may send copies of their applications and testimonials to Members of the Council.

EDWARD R. PICKMERE,
Town Clerk.

Town Clerk's Office,
Liverpool.
February 8, 1918.

MECHANICAL MAINTENANCE ENGINEER.

Mechanical Maintenance Engineer wanted for power station, with experience of water-tube boilers, high-speed engines, and preferably with turbine experience; wages £3 5s. per week, plus 15s. bonus.

Apply, stating experience, with copies of testimonials, and when able to commence duty, to—

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Electricity Department.

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Purchaser may have almost immediate possession.

Further particulars may be obtained from H. R. BURNETT, Electricity Works, Barrow-in-Furness.

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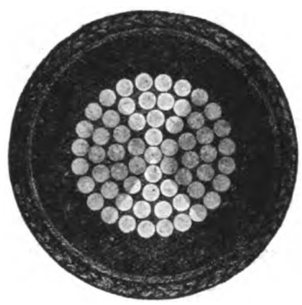
1837.  1918.

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THE
Tramway AND Railway World

Established in 1892 and Published by

THE TRAMWAY & RAILWAY WORLD PUBLISHING CO., Ltd., AMBERLEY HOUSE, NORFOLK STREET, LONDON, W.C.

Sixty-four issues are published annually, including twelve large numbers which are fully illustrated and printed on art paper.

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FOR THE UNITED KINGDOM—Twenty-five Shillings per annum, including 64 issues, of which 12 are illustrated numbers. One Shilling per Single Copy.

FOR ALL PLACES ABROAD—Thirty Shillings per Annum.

SATURDAY, FEBRUARY 9, 1918.

EDINBURGH AND QUEENSFERRY TRAMWAY.

It is evident from the latest information that there are good prospects of the proposed electric tramway from Edinburgh to Queensferry being speedily authorised and constructed. Voluminous reports regarding the probable traffic and financial results have already been presented to Edinburgh Town Council, and have appeared in our pages. These, along with a prospect of Admiralty support, encouraged the Corporation to proceed, and application is about to be made for parliamentary powers. Negotiations with landowners and local authorities concerned are proceeding satisfactorily. This line, about eight miles in length, will be one of the most important inter-urban electric tramways in the country. It is true that Queensferry is only a small place, but there are great potentialities of development, as the Rosyth naval base is nearly directly opposite on the north shore of the Firth of Forth, about a mile and a half away. Apart from passenger traffic connected with the navy, the route has for many years been a favourite one for tourists and holiday makers. The scenery is fine and varied, being at first on leaving Edinburgh rich agricultural country, then changing to a sharply undulating and well-wooded landscape, embracing among other points of interest the Dalmeny estate of the Earl of Rosebery, and terminating in a fine view of the Firth of Forth with its islands and shipping. In the later eighties when the Forth Bridge was building, enormous numbers of people went down to Queensferry by road in the summer time to view the structure. Four-horse open coaches were the vehicles employed, and as time went on motor coaches were substituted. There is no reason to suppose the crowds of summer visitors will ever fall off, because, besides the drive itself being a delightful one, it is not possible to see much of the Forth Bridge from a railway train. The visitor has to view it from the shore, and also—in peace times—from a small steamer which takes him round. After getting clear of Edinburgh the road runs for practically the whole way through open country, and is reputed one of the finest highways in Scotland. It was the first stretch of a route to the north in the old coaching days. For about half the distance the road is almost level, but beyond Cramond Bridge it abounds in long steep gradients, and terminates with a great plunge down to sea level at the entrance to Queensferry. On account of these gradients it will be necessary that the tramway cars should be equipped with powerful brakes of two or three kinds, so that there may be always a reserve. As it is proposed, however, that for part of the way the tramway shall have the road and be constructed on its own right of way through the fields and woods, there ought to be an opportunity of minimising some of the gradients. Cuttings and embankments presumably may be resorted to, as in the case of a railway. For the visitor there is also a prospect of riding through the wheat fields, with the golden ears in the autumn almost looking in at the car windows. That is what may already be experienced in the case of the Wemyss inter-urban tramway on the other side of the Firth of Forth. As to developments, it can hardly be doubted that a good tramway service would lead to the extension of the Edinburgh north-western suburbs far beyond their present range, and the few small villages farther out, not to speak of Queensferry itself, would increase in population. This is the more likely as the railway from Edinburgh to Queensferry follows a circuitous route, while the road runs direct and is far away from the railway.

WAGES AND WAR BONUSES.

Following the conference which was held in London on the invitation of Sir George Askwith on January 29, when there were present representatives of municipal tramway committees and tramway companies, and of the National Transport Workers' Federation, Mr. Robert Williams, secretary of the Federation, has sent a letter to Mr. G. H. Roberts, M.P., Minister of Labour. At the conference the representatives of the Workers' Federation asked that the award of January 8 of an increase of £1 a week already granted to workers in commercial road transport might be extended to those engaged in passenger transport by road. The conference met without any power to deal with the demands of the men's federation, and no definite conclusion was reached, as was indicated in our last issue. Though the conference specially related to tramway and omnibus assistants, much larger issues were involved. As a matter of fact, some of the undertakings already pay their employees more than the terms now asked, and others are considering applications which have been made to them individually. It was the desire, however, of the Federation that the questions at issue should be decided by the employers as a whole, and considerable disappointment was expressed by the Federation's representatives at the conclusion of the conference.

Mr. Williams's letter to the Minister of Labour complains of the attitude of the employers, who passed a resolution informing Sir G. Askwith that as the conditions appertaining to the passenger-carrying undertakings are not comparable with the majority of the interests represented in the Federation, they could not enter into negotiations on the lines suggested by the Federation's representatives, but were willing and anxious to enter into negotiations with the trade unions who directly represented their employees, with a view to setting up joint industrial councils on the lines of the Whitley report. "The Federation," Mr. Williams continues, "is still anxious to re-open negotiations upon a national basis. Granting the existence of what is called 'the vicious circle' of increased prices, necessitating increased wages, and bringing about further increases in prices, you will readily admit that those who are left outside the ambit of the 'vicious circle' are in a far worse position than those who keep themselves within the circle. For these reasons we are demanding conditions for tramway and 'bus workers comparable with those obtained by the other sections of workers equally well organised and equally clamorous in demands. I would like to have your observations as to whether your Department is in a position, either alone or with the War Cabinet, to provide for a re-opening of the negotiations."

The 12½ per cent. advance in wages recently granted to engineers, has been extended to coach body builders, coach painters, coach fitters, etc., of the Salford Corporation tramways department.

The following are some of the other recent decisions given by the Committee on Production and the Special Arbitration Tribunal on cases which have been referred to them by the Ministry of Labour, including cases arising out of the Orders under which a bonus to munition workers has been given :—

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RAILWAY SHOPMEN.—Entitled to 12½ per cent. on earnings. Men other than plain time workers, a bonus of 7½ per cent.

IRONFOUNDERS (Messrs. Asa Lees and Co., Ltd., Oldham).—Bonus of 7½ per cent.

WIRE ROPE TRADE.—Plain time workers, a bonus of 12½ per cent.

The Newcastle Corporation Tramways Committee have recommended that male drivers and conductors should receive a further increase in wages of 2s. per week. This will make a total advance of £1 per week over pre-war rates. Female employees are to receive an additional 1s. 6d. per week.

The Tramways Committee of the Dundee Town Council at its last meeting decided to recommend, subject to reconsideration after the national award, that an advance up to 15s. per week on pre-war wages be granted to male employees, on the basis of a fifty-four-hour week, with payment for overtime at the rate of time and a quarter. No change is proposed in the amount paid to female employees, but it is recommended that the present basis of 60 hours per week be reduced to 54, also with time and a quarter for overtime.

At a special meeting at which Councillor Hakes, chairman, presided, Hull Tramways Committee considered the application for a minimum advance of £1 a week to all drivers and conductors.

The employees of the Sunderland Corporation Tramways, whose applications for a further increase of 10s. per week have been the subject of discussion with the Corporations for some time past, have abandoned their applications for the time being. This course has been adopted, it is understood, in view of the negotiations now proceeding in London on the whole question of wages of tramway employees throughout the country.

L.C.C. TRAMWAY MATTERS.

The fortnightly meeting of the London County Council was held on Tuesday, when several reports were received from the Highways Committee.

CONTRIBUTION TO SOCIAL AND ATHLETIC ASSOCIATION.

The Council agreed, on the recommendation of the Committee, to make a contribution of £105 a year to the funds of the Tramway Department Social and Athletic Association from January 1, 1918, until six months after the end of the war. It is expected by that time the membership, at present about 1,100, will be greatly increased and that the funds of the association will then be adequate for its needs.

WAGES OF EMPLOYEES AT GREENWICH POWER STATION.

On December 6 additional war wages of 5s. a week, making war wages of £1 a week in all, were paid to persons on the operative staff in the tramways department who came within the scope of the award of November 6, 1917, of the Committee on Production relating to the engineering and foundry trades. This award did not apply to employees at Greenwich power station and the tramway sub-stations except the men engaged on the repair staff. The advance is, however, being paid to men employed in generating stations and sub-stations generally throughout the whole of Greater London, and the Council agreed that the advance should be paid to the remainder of the men concerned at Greenwich power station and the sub-stations. The cost of this proposal is estimated at £2,400 during he current financial year, and £7,100 during 1918-19.

MAINTENANCE OF TRAMWAYS.

The Highways Committee during the three months ended December 31, 1917, sanctioned the expenditure of £2,500 for the welding and repair of rail joints for the tramways in Wandsworth Road, and arrangements were made for the work, including twelve months' maintenance, to be carried out by the Tudor Accumulator Company at a cost of 53s. 6d. a joint.

SUPPLY OF COAL FOR GREENWICH POWER STATION.

About 19,500 tons of coal and 800 tons of coke for use at Greenwich power station were purchased during the quarter ended December 31, at a cost of approximately £43,000.

CLAIMS.

The Highways Committee have settled 1,034 claims against the Council in respect of accidents arising in connection with the working of the tramways, the cost of the settlements having amounted to about £7,748. In fifteen other cases actions were brought against the Council. In six of these a verdict against the Council was given, and sums amounting to £326 2s. 4d. and costs had to be paid; nine actions resulted in the Council's favour. The Committee have approved the settlement for £388 9s. 5d. of claims made by the Council in respect of damage to tramways property.

QUEUES ON TRAMWAY ROUTES.

Representations having been made by several metropolitan borough councils in favour of the formation at important traffic points of queues for intending tramway passengers, a conference was held on November 29, 1917, between representatives of the Council and the metropolitan borough councils concerned. It was agreed at this conference that the borough councils should select the places at which they desired queues to be formed, and that the borough surveyors concerned should then confer with the general manager.

THROUGH RUNNING WITH METROPOLITAN ELECTRIC TRAMWAYS.

The following are among the terms for through running, which have been in operation since November 1, 1917.

The company to pay to the Council 1.62d. a car mile for energy utilised by the company's cars on the tramways between the Manor House and Blackstock Road; the mileage run by the company's cars over the Manor House in Blackstock Road tramways not to exceed 1,860 miles a week except with the consent of the Council. If, and when the company is in a position to reinstitute the through service between Holborn and North Finchley, certain arrangements are to apply, including: The through service to North Finchley to be reinstated. A service to be extended by the Council to Wood Green to compensate for the mileage run by the company's cars over the Manor House to Blackstock Road tramways.

Either party may at any time during the currency of the agreement give the other party notice that it desires to have a special check taken of the through traffic; within three months of the date of such notice, the party calling for the special check shall, if it desires any revision of the then arrangements, give notice thereof to the other party. If within two months of the date of this notice of revision no settlement be come to between the parties, the through running arrangement to be determined unless otherwise agreed.

THE NATIONAL TRAMWAY COMMITTEE.

CO-OPERATION OF TRAMWAY UNDERTAKINGS.

The recently constituted Tramways (Board of Trade) Committee issued a circular letter on January 29 to the tramway undertakings of the United Kingdom, setting forth their constitution and purpose, and asking for co-operation in forming area sub-committees. The letter gave the names of the members of the Committee, the terms of reference, and the duties as laid down by the Board of Trade. particulars of which have been given in previous issues. The circular, which was signed by the Secretary, Mr. J. N. Wilson, then continued as follows:—

"It will be apparent that the work involved is of great magnitude and of national importance, and the Committee have been giving very serious consideration to the machinery which they will set up for the purpose of carrying out the duties imposed upon them by the terms of their reference.

"For this purpose it has resolved to divide the country into nine areas, which will be placed in four groups under sub-committees of the Committee to be termed "Area Sub-Committees."

"The nine areas will be as follows:—

1. Metropolitan and East Coast.
2. South-East and South to Bournemouth.
3. South-West and South, excluding Bournemouth.
4. Midlands.
5. Lancashire, Cheshire and Wales (North).
6. Yorkshire and Lincolnshire.
7. Northern.
8. Scotland.
9. Wales (South).

"To assist the area sub-committees in carrying out their investigations, it has been decided to invite representatives of the tramway undertakings in each area to act in a consultative capacity as Local Advisory Committees. As soon as possible, meetings will be arranged in convenient centres in each area to be attended by the members of the area sub-committee concerned, when the scheme will be further explained.

"I am, therefore, to enquire whether my Committee may rely on the co-operation of your Tramways Committee in giving effect to these proposals. Your friendly assistance will be much valued by my Committee, who will doubtless be confronted by many difficult problems in the discharge of the duties with which they have been entrusted."

The Board of Trade Journal states that there has been an immediate and favourable response from the tramway undertakings of the country. Already a large number of undertakings in important centres have signified their willingness to co-operate in forming the area sub-committees, and in many other cases, although formal meetings of the committees or boards of directors have not yet been held, through lack of time, the chief executive officers have promised their active assistance.

MIDLAND MUNICIPAL TRAMWAYS ASSOCIATION.

With the object of forming a Municipal Association of Midland Tramways, a meeting was held in Birmingham on Friday last, under the presidency of Alderman S. Flint, chairman of the Leicester Tramways Committee and president of the Municipal Tramways Association, of representatives of the various municipal tramway undertakings in the Midland area, including Birmingham, Walsall, Coventry, Wolverhampton, Northampton, Nottingham, Derby, Lincoln, and Gloucester Corporation tramways.

The association was duly formed, and Mr. Harrison Barrow, chairman of the Birmingham Corporation Tramways Committee, was elected chairman for the ensuing year, Alderman Flint deputy chairman, and Mr. R. L. Horsfield, general manager of Walsall Corporation tramways, was appointed secretary. It was decided to hold quarterly meetings, with special meetings as may be required. The Midland Association is to include representatives of tramway committees as well as the general managers of the undertakings.

Danger of Dead-ends.—The danger and confusion arising from the congestion of both cars and passengers at that most notorious of London's dead-ends, near Victoria Station, were strikingly exemplified by a fatality that occurred there last week. An elderly man was attempting to pass between two stationary cars, when, by accident, one of them moved forward, with the result that he was caught between them, sustaining fatal injuries. It appeared that the driver of the car had left it for a moment to go to the aid of someone else who was in danger.

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GAS-DRIVEN MOTOR VEHICLES.

NEW ORDER IN FORCE FEBRUARY 10.

The Board of Trade issued the following announcement on February 5 :—

Under the provisions of Clause (11) of the Motor Spirit (Consolidation) and Gas Restriction Order, 1918, motor vehicles fitted with gas apparatus may not be driven after February 9 next without a gas permit issued by the Petrol Controller. Forms of application for gas permits will be furnished on request by the Petrol Control Department, 19, Berkeley Street, London, W.1. If the motor vehicle was fitted with gas apparatus before January 3, 1918, or has since that date been fitted with apparatus ordered before December 21, 1917, a gas permit will be issued on application, subject to the conditions mentioned below. If, however, a motor vehicle is not at present so fitted, or if the order for the gas apparatus has been given since the intention to restrict the use of gas was announced, the application will be considered on its merits, and a gas permit will be issued only in those cases where a motor spirit licence would otherwise be granted.

A motor spirit licence and a gas permit will not be granted in respect of the same vehicle, except in the following cases :—

Owners of hire cars and taxicabs will be allowed with each gas permit granted an emergency ration of petrol, not exceeding four gallons per month, in those cases where the motor spirit licence is surrendered.

Owners of omnibuses will be required to give a provisional estimate of the monthly mileage run on gas and on petrol respectively, and a gas permit will be granted subject to the condition that the quantity of petrol licensed shall be reduced in accordance with the mileage run on gas.

Owners of trade vehicles who make application for a gas permit will be required provisionally to surrender one-third of their present allowance of petrol granted in respect of the vehicles for which application is made.

Owners of both omnibuses and trade vehicles will be required to furnish a monthly statement of the mileage run on gas and petrol respectively, and the reduction in the quantity of petrol licensed will be adjusted accordingly. It is not proposed to make any reduction of the existing allowance of petrol in respect of mileage run on gas before January 3, 1918.

In cases where a gas permit is granted in respect of any vehicle, and the owner possesses a stock of petrol obtained in accordance with the provisions of a motor spirit licence, such stock of petrol may be used, in addition to gas, for the purpose of driving the vehicle.

The same restrictions as to purposes of use apply equally to petrol-driven and gas-driven vehicles, but, while a motor spirit licence limits the quantity of motor spirit that may be obtained, a gas permit does not so limit the quantity of gas. The issue of a permit will not, however, give the holder a right to demand a supply of gas from any source.

MISCELLANEOUS NEWS AND NOTES.

London United Tramways Bill.—The London County Council has decided to petition against the Bill of the London United Tramways, Ltd. Other Councils concerned will also oppose the Bill.

Deputy Tramway Manager for Liverpool.—The Tramway Committee have decided to advertise for a deputy general manager of the tramway undertaking at a salary of £800 per annum. Particulars will be found in our advertisement columns.

Electricity Works Extensions.—The Local Government Board has sanctioned the borrowing of £6,000 for the extension of the Bolton Corporation electricity works. Mansfield Town Council have applied for sanction for £20,500 for extensions of their electricity works.

The British Thomson-Houston Co., Ltd., of Rugby, have issued a fully illustrated description of their ironclad oil-break switchgear, type O, form K. The description is given in a pamphlet (No. 4161) of their usual standard form, consisting of six pages, with numerous illustrations.

Increase in Fares.—The Lancashire Tramways Company, owing to increased costs, have found it necessary to raise all fares. For the same reason fares on the Morecambe Corporation tramways are increased from February 4 to the same rates as were in force in the summer months.

"Safety First" Council's First Annual Meeting.—The London "Safety First" Council will hold its first annual meeting at Caxton Hall, Westminster, on Monday, the 18th inst. Lord Sydenham will be in the chair, and the adoption of the first annual report will be moved by Mr. Joynson Hicks, M.P., and seconded by Sir Edward Smith, L.C.C.

Economy in Fuel.—In view of the necessity of economising fuel and the labour required to transport it, Mr. Guy Calthrop, Controller of Coal Mines, has called the attention of all consumers of gas and electricity to the need of the greatest possible saving in their use. The need for this economy is accentuated in large cities and towns remote from coal fields, as in the case of London and all towns in the south.

Glasgow Tramway Traffic.—The Glasgow tramway service is still about one hundred cars short, but repairs are being carried on as rapidly as the shortage of labour permits. Traffic, however, owing partly to a rearrangement of the time-table, is assuming its usual proportions. For the week ended February 2, the takings amounted to £26,610, an increase of £2,529 over the previous week, and more than £3,500 as compared with the same week a year ago.

Office Organisation for Utility Undertaking. — The periodical Operations Department's "Efficiency Meetings," held by the London Underground Railways and L.G.O.C. Group, are by this time well known, and at the fourth meeting of the third series, held a few days ago, the subject discussed was that of "Office Organisation and Office Appliances." This was the title of a paper read by Mr. G. S. Walton, indoor assistant to the General Superintendent of the London General Omnibus Company. After dealing with the personal aspect of office organisation, the question of office appliances was considered in some detail, both in general, and particularly as affecting the needs of big public utility concerns. An interesting discussion followed, in which, amongst others, Mr. W. Holt, traffic superintendent, Metropolitan Railway, and Mr. J. Pepper, outdoor goods manager, Midland Railway, took part.

Proposed Amalgamation of Vehicle Workers.—A ballot is being taken of the members, some 60,000 in number, of the Amalgamated Association of Tramway and Vehicle Workers and the London and Provincial Union of Licensed Vehicle Workers on the question of a union between the two bodies. The essential points of an amalgamation have been agreed on between representatives of the unions, and if it goes through the new body will be known as the United Vehicle Workers.

Strike Notices Withdrawn at Blackburn.—The threatened strike of tramway employees at Blackburn is for the present, at least, averted. The men, after discussion of the offer of the Tramways Committee to hold a meeting, have decided to send representatives to meet the Tramways Committee to discuss their grievances with them. The strike notices, which were to have expired on February 1, have been withdrawn, and it is hoped that a mutually satisfactory settlement will be reached.

Purchase of Oldham Tramways.—Oldham Town Council have decided to apply to the Board of Trade for an order extending for one year the period in which they have the power to purchase that part of the undertaking of the Oldham, Ashton and Hyde tramways which is within the borough. It was reported at the last meeting of the Council that the Corporation had been unable to come to terms with the company for the purchase, and to protect themselves it was necessary to apply to the Board of Trade.

L.C.C. Tramways and Increased Fares Proposal.—The suggestion now being considered by the Tramways National Committee as to a general increase in maximum fares on tramways was the subject of a question at last Tuesday's meeting of the London County Council, by Mr. J. D. Gilbert, M.P. In reply, Mr. Hume (Chairman of the Highways Committee) said the matter had not been brought officially to his committee's notice. The question raised by the Government Committee was not as to an increase of fares by 50 per cent., but of increasing the maximum, a question which did not directly interest the Council, as they had no maximum fares.

Tramcars as Travelling Kitchens.—The possibility that tramcars may be requisitioned to play an important part in solving the national food problem was foreshadowed in a statement made by Alderman C. F. Spencer, Director of National Kitchens, at a conference held at the Ministry of Food on Monday last. A scheme outlined by the authorities provided for a system of food distribution, comprising central depots and distributing stations, and it is suggested that vehicles such as motor-omnibuses and tramcars should be the means of transport. Being both economical and speedy, the cost of conveyance would be kept at a minimum, whilst the arrival of the food hot at the distributing stations would be ensured.

Newcastle Workmen's Cars.—In reply to complaints as to alleged overcrowding on workmen's services, Mr. E. Hatton, general manager of the Newcastle Corporation Tramways, points out that during the week preceding the outbreak of war there was an average of 97 to 99 early morning workmen's cars running over the system, the weekly total of workmen passengers being 108,000. Last week, with the exception of Sunday morning, the lowest number of workmen's cars out was 143, and the highest 165, and the number of workmen passengers was 248,889. The largely increased traffic was only handled with difficulty by the aid of auxiliary labour, and when recently, owing to bad weather and sickness of employees, it was found impossible to run as many cars as usual the fact was frankly stated by notices exhibited in the cars, Every effort, however, was made to meet the special needs of workmen, and those of the general community.

The Proposed Edinburgh-Queensferry Tramway Route.—At a meeting of the Tramways Committee of Edinburgh Town Council last week, it was reported that the negotiations with owners and local authorities in regard to the proposed tramway from Edinburgh to Queensferry had so far proceeded satisfactorily, and that in particular the scheme had met with favourable consideration from the Town Council of Queensferry. In consideration of representations made to the Committee it was agreed to depart from the original intention of terminating the line running down the Hawes Brae at Hawes Pier, and instead, to carry it by a single line to the Town Hall, a course probably involving the acquisition of property in the High Street. This would be necessary in order to cope with the opposition service from the 'buses, and it was agreed to incorporate the proposal in the Parliamentary Bill to be promoted in March. It will also include the proposed alternative route which runs to Port Edgar by way of the road passing Dalmeny Station.

Difficulties at Northampton.—Mr. J. F. Cameron, manager of Northampton Corporation tramways, has presented a report to the Town Council in regard to the irregular running of the cars. He states that during the last three months 13 female conductors lost 2,054 hours owing to illness and other causes, and 839 shifts had to be rearranged owing to the absence of staff for the same reasons. Women conductors were late for duty on 52 occasions, and on 42 occasions failed to arrive at all. Motormen were late for duty on 23 occasions, and on 19 they failed to arrive. Mr. Cameron records his appreciation of the splendid service given by some at least of the women conductors. Since the outbreak of war, there have been the following changes of staff in the various departments :—Office staff, 12 ; power station, 33 ; car depot, 47 ; motormen, 75 ; men conductors, 47 ; women conductors, 78. Under such circumstances Mr. Cameron remarks that it is impossible to give the same efficient service, and taking into consideration these changes, among other difficulties, the public has little cause to complain. On the occasion of the recent snowfall, every man on the snow gang worked untiringly with the means at his disposal to clear the track. A few of the staff, including himself, worked nearly fifty hours without sleep.

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Co-operation of Capital and Labour.—Mr. F. Huth Jackson presided on Wednesday at a meeting of the National Alliance of Employers and Employed, the non-political body recently formed to promote the active co-operation of capital and labour on industrial questions. On the subject of the reinstatement in civil employment after the war of men serving with the forces, and also munition workers, a constructive scheme was submitted, which will be placed before the Government. With a view to preventing industrial disputes and increasing the efficiency of the industry of the country, sub-committees have been formed in many large centres, including Liverpool, Sheffield, Birmingham, Manchester, Cardiff, and Swansea. The movement was stated to be taking root in Leeds, Newcastle, Darlington, Edinburgh, and Glasgow.

Proceedings of the Municipal Tramways Association.—The Proceedings of the Municipal Tramways Association, 1916-17, has now been published. The volume contains a full report of the annual conference and business meeting held in Blackpool in September last, and includes the presidential address by Mr. Henry Mozley; papers on Tramway Finance, by Messrs. J. Barnard, G. W. Holford and P. Priestly; The Rule of the Footpath, by Mr. J. Dalrymple; Differentiation in Fares for Workmen on Tramways, by Mr. W. Murray; and Development of Tramways, by Mr. Arthur Ellis. A full list of the members of the Association, including local authorities and managers and assistants, is given, and a useful tabulated statement of arrangements made during the war by the various local authorities with respect to allowances to dependants, war bonus, enlistments, employment of women and auxiliary drivers. Copies (price 5s.) may be obtained from Mr. A. R. Fearnley, Hon. Secretary, Division Street, Sheffield.

Overturned Car at Bradford.—A serious accident, of which the exact cause is at present unknown, occurred on the Allerton section of the Bradford Corporation tramways on Thursday of last week. The route in question has a somewhat steep incline, on which there is a Board of Trade notice directing all downcoming cars to stop. One of the larger type of Bradford cars, with covered top, and then carrying fifteen passengers, failed to stop as required, and, despite all the efforts of the driver, proceeded down the hill out of control, at rapidly increasing speed. At first it kept the track, but later left the rails, and overturned. Fourteen of the passengers were more or less seriously injured; the driver—who remained at his post, and did all he could, first to avert and then to minimise the accident—was killed. He was a thoroughly trustworthy and experienced man, having had sixteen years' service with the Corporation. The same car, it may be remarked, was blown over in a gale some five years ago, and he was then in charge of it.

Tramway Passenger's Lost Parcel.—The Leeds Corporation were the defendants in a County Court action recently, in which a passenger sought to recover the value of a parcel lost whilst plaintiff was travelling on one of its cars. It was stated that a ticket for one penny was given in respect of the parcel, which, being somewhat heavy was carried on the platform of the car, the passenger sitting inside in the ordinary way. The conductress found that the parcel had rolled off the platform into the road, the car was stopped, and the plaintiff went to look for it, but without success. It was contended that the Corporation were bailees for the purpose of carrying the parcel for value, and there had been gross negligence on the conductress' part. The Corporation set up a special defence under the Leeds Corporation Consolidation Act, 1905, and the by-laws, which provided for the carriage of personal luggage at passenger's risk, provided its weight did not exceed 28 lb. It was denied that any charge was made or ticket given in respect of the parcel in question. It was further urged that (as it consisted of goods relating to plaintiff's business) it was not personal luggage, but merchandise, and though actually carried free should have been paid for. In any case no negligence had been proved. The judge held that the parcel had not been paid for as merchandise, and that there was no negligence on the part of the conductress. He therefore found for defendants.

York Tramway Service.—The report of Mr. J. W. Hame, the tramways manager, recommending certain changes in order to improve the service, has been accepted by the City Council. Mr. Hame states that the total number of cars in stock is thirty-six, of which twenty-one are used for ordinary service and twelve for workpeople's service, the remaining three being invariably under repair or painting. There are also four trailers. The total seating capacity of the cars is 1,044. The small margin of cars is insufficient. As regards the lay-out of the six sections of tramways, Mr. Hame points out there is no circuit for turning cars which would enable any section to be worked separately. It has always been undesirable to turn cars at the station, as at that point there are more than 700 cars passing daily—upwards of one per minute. There are twenty-three departures from each side of the city each hour of the day. Complaints in regard to the service arise, mainly in bad weather, from those who are not regular users of the cars. At such times the accommodation is automatically much reduced, as few passengers are willing to travel outside. Failing the use of top covers, Mr. Hame says that trailer cars must be used to a much greater extent as soon as it is possible to do so, and that loops should be provided at the end of each section where trailers are to be used. At present the department has neither the spare cars nor the staff to deal with occasions of rush traffic. Mr. Hame recommends, among other changes, that the price of dinner hour and War Office tickets be increased by a halfpenny for each return journey; that the War Office quarterly contract tickets be discontinued, and that preliminary steps be taken to obtain powers to charge increased fares. The Tramways Committee propose to postpone for a time the increase of maximum fares, in order to await the result of the Board of Trade's consideration of the question. They have requested the general manager to report what further alterations of stages are possible, so as to charge the full penny per mile rate.

PERSONAL.

Mr. R. B. Leach, borough electrical engineer of Loughborough, has been granted an increase of £50 in his salary.

Mr. J. A. Crowther, electrical engineer, of Wallasey, has been granted an increase in salary of £100 per annum as from March next.

Mr. F. H. Corson, engineer and general manager of Gloucester Corporation light railways, has been granted an increase in salary from £500 to £600 per annum.

Mr. Alfred Baker has been appointed as the representative of the Municipal Tramways Association on the Trade Advisory Committee (Disabled Soldiers and Sailors Branch).

Mr. Horace Wyatt is the author of a small volume entitled "The Motor Industry," published by Sir Isaac Pitman & Sons, which deals with the present and future position of this branch of British engineering, including the development, products and methods which brought the industry to the prosperous position which it had attained previous to the war.

Mr. G. W. Holford, general manager of Salford Corporation tramways, has been asked, as reported in our last issue, to act as assistant to Alderman C. F. Spencer, of Halifax, who has been appointed director of the Central Kitchens Division of the Ministry of Food. At the request of Lord Rhondda, the Salford Tramways Committee have granted permission to Mr. Holford to relinquish his duties at Salford temporarily.

Manchester Tramways Committee has recommended the following increases in the salaries of tramway officials:—Mr. Jas. Wood, financial superintendent and assistant manager, from £600 to £750 per annum by three annual increments of £50 each; Mr. J. T. Oakes, traffic superintendent, from £500 to £600 per annum by two annual increments of £50; Mr. F. A. Mitcheson, accountant, from £400 to £550 per annum, by three annual increments of £50; Mr. G. R. Blackburn, from £400 to £500 per annum, by two annual increments of £50 each; Mr. D. G. Mallalieu, permanent way superintendent, from £350 to £400 per annum.

Mr. Spencer Needed at Bradford.—The Bradford Tramways Committee on February 4 passed the following resolution:—"That in the opinion of this committee the time has now arrived for the tramways manager (Mr. C. J. Spencer), who has been engaged for more than a year on work for the Admiralty, to return to Bradford in order to resume active control of the tramways undertaking, which, while always requiring careful handling, is at the present time more than ever in need of the manager's personal and continuous supervision, and that the Town Clerk be instructed to communicate with the Admiralty and request them to release the tramways manager at an early date." Mr. Spencer, in a statement he made to the committee, said that all he was anxious to do was to give his best services to the country, and that he was ready to undertake duties under any authority if he was considered to be doing his best for the national cause. He quite realised that the tramways undertaking required his personal supervision, and was prepared to resume his former duties if the authorities were so minded to dispose of him.

FINANCIAL REPORTS AND MEETINGS.

City and South London Railway.—The directors of the City and South London Railway Company recommend a dividend on the Consolidated Ordinary stock for the six months ended December 31, 1917, of ¾ per cent., making for the year 1½ per cent., carrying £21,265 forward. A year ago the dividend was the same, with £17,245 carried forward.

London Electric Railway.—The directors of the London Electric Railway Company recommend a dividend at the full rate on the Four per cent. Preference stock for the past year and on the Ordinary shares for the six months ended December 31, 1917, of ¾ per cent., making for the year 1½ per cent. carrying £30,656 forward. A year ago the dividend was the same, with £24,474 carried forward.

North London Railway.—The directors of the North London Railway Company, after placing £10,000 to general reserve, recommend a final dividend to December 31 last of £1 15s. per cent. on the Consolidated Ordinary stock, making £3 15s. per cent. for the year, and carrying forward about £10,600. For 1916 the dividend was the same, with £5,000 placed to general reserve and £10,302 carried forward.

Bath Corporation's Thanks to Tramways Company.—At its quarterly meeting on Tuesday last, the Bath City Council passed a resolution expressing its appreciation of the public-spirited action of the Bath Electric Tramways Co., Ltd., in carrying wounded soldiers free of charge for a period of over three years, thus materially assisting in making the stay of the men in Bath as pleasant as possible."

London General Omnibus.—The directors of the London General Omnibus Company recommend, subject to audit, a dividend on the Ordinary shares for the six months ended December 31 last of 3 per cent., making with the interim dividend of 4 per cent. 7 per cent. for the year, with £107,938 placed to reserve and £38,547 carried forward. For the previous year the dividend was 8 per cent., £198,330 being added to reserve and £21,417 carried forward.

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Central London Railway.—The directors of the Central London Railway Company recommend a dividend on the undivided Ordinary stock for the six months ended December 31, 1917, of 1¼ per cent. making for the year 3½ per cent., on the Preferred Ordinary stock of 2 per cent., making 4 per cent. for the year, and on the Deferred Ordinary stock for the year 3 per cent., leaving £11,147 to be carried forward. A year ago the dividends were the same, with £12,079 carried forward.

Metropolitan District Railway.—The directors of the Metropolitan District Railway Company recommend dividends making for the year 4 per cent. on the Four per Cent. Guaranteed stock, 4½ per cent. on the Four and a half per cent. First Preference stock, and on the Five per cent. Second Preference stock for the six months ended December 31, 1917, 1½ per cent., making for the year 3 per cent., and carrying £29,029 forward. A year ago the dividend was at the same rate, £20,688 being carried forward.

Underground Electric Railways.—The directors of the Underground Electric Railways Company of London state that, subject to confirmation of the dividend announcements by the companies in which this company is interested, and subject to final audit, the revenue of the company will enable it to pay the full interest to December 31 last on its Six per Cent. First Cumulative Income Debenture stock, and to pay 2 per cent., free of income-tax, on its Six per Cent. Income bonds of 1948 for the half-year ended December 31, making 4 per cent., free of tax, for the year, with a carry forward of about £31,000. A year ago the payment on the Six per Cent. First Income Debentures was at the same rate, but that on the 1948 Income bonds was 5 per cent. for the year, £30,000 being carried forward.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended February 6 amounted to £52,747, an increase of £13,671, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to February 6 (forty-four and a half weeks) the total receipts were £2,455,055, an increase of £339,866, on the corresponding period of 1917.

Liverpool Tramways.—The Liverpool Tramways and Electricity Committee report another good year. The tramway undertaking shows a surplus of £167,243 for the year ended December 31, 1917. Of this sum the Committee propose to transfer £42,243 to reserve, renewals and depreciations account, and £125,000 to the general rate. The electric supply account has a surplus of £100,298, of which £35,298 goes to the renewals account and £65,000 to the general rate. The committee recommend that in consequence of increased costs the charge for electrical energy be increased from the end of the current quarter by 17½ per cent., except for electrical energy supplied to the tramways.

Dublin United Tramways Company.—The report for the year ended December 31, 1917, shows generally an all-round increase of receipts, the latest total of £369,936 comparing with £335,335 for 1916. Against this, however, as might be expected, there is a considerable increase in working expenses, *i.e.* £251,951 for 1917 as against £220,861 in the previous year. The balance available for distribution is £96,236, and the dividends are on the same basis as for 1916; the amount carried to reserve, viz., £7,000, is also identical. For renewal of permanent way, however, the allocation is £15,000, or £5,000 less than before, but £11,500 has been written off investments, bringing them approximately to present market value.

Sunderland's Good Results.—The estimates for the year ending March 31st next of the Sunderland Corporation tramways show an income of £94,820 as compared with £85,513 1s. 3d. actual income for 1916-17. The total working expenses are placed at £57,430 as against £49,970, which leaves a balance to be carried to net revenue account of £37,390, comparing with £35,543 last year. An increase of over £4,700 in traffic expenses is chiefly due to wages advances to employees. General repairs and maintenance amount to £8,650, which is over £1,300 more than last year, this being due to increased cost of material and wages advances. The cost of power is put down at £12,500. Payments for the net revenue account include, in addition to £5,000 for the relief of the rates, £6,041 to the reserve and renewals fund, and a new item viz.: £1,500 as depreciation of investments. Loans have been repaid to the extent of £13,618, and interest on loans amounts to £6,896.

South Shields Borough Tramways.—Mr. J. C. Whiteley, in his report for the year ended March 31, 1917, states that the results are again very satisfactory, the passengers carried and the receipts being well above those of previous years. The undertaking has been seriously handicapped by shortage of staff. Owing to the difficulty of getting suitable drivers not eligible for the Army, an adequate service of cars could not be run, and there was some overcrowding and inconvenience to the travelling public. The omnibus services had to be curtailed somewhat owing to trouble with the batteries, while the financial result is not so good as that for the cars. The omnibus services, however, were a convenience to the people, and they act as feeders to the whole system. Extensive overhauling and renewals will be necessary when circumstances permit. Only minor repairs and renewals to the permanent way have been carried out, but the wise policy has been adopted of setting aside a permanent-way renewals fund, which will relieve to some extent the heavy charges which will fall on the undertaking after the war. Mr. Whiteley recommends in addition the provision of a fund for the repair and renewal of the overhead equipment, rolling stock, etc. The department now employs thirty-six women conductors, who are carrying out their duties efficiently. The manager records his appreciation of the splendid way the whole of the employees have carried out their duties. The traffic staff have spared no effort and work long hours. The total revenue amounted to £44,038, an increase of £2,611 over last year, but there was an increase in expenditure of £1,792. The balance carried to net revenue account was £13,288.

Edinburgh and District Tramways Co.—In moving the adoption of the report at the annual meeting of this company, the chairman (Mr. A. H. Laidlay) said the past year was in many respects by far the most trying within the company's experience. Until well on in the year the position had been a most serious one, as the system was being carried on at a loss. They paid the corporation, in the name of rent, £113,000 per annum, including rates and taxes, whilst the return to the shareholders since the inception of the company had been little more than £6,900 per annum. Regarding their difficulties with the corporation, they had now entered into an agreement which he thought was the fairest that could have been arranged. It was to be regretted it was impossible to pay a dividend this year, but the directors considered that, in view of the expiry of the lease in eighteen months time, they were acting in the interests of the shareholders in making provision for the unknown possibilities of the future. The increase of fares had produced satisfactory results, and the total passengers carried showed a steady increase, the total for the year having been 70,687,146, equivalent to about 220 journeys per head of the city's population.

CONTRACTS AND ORDERS.

Babcock & Wilcox, Ltd., have a contract with the Derby Town Council for a boiler for the electricity works, at £4,595.

The General Vehicle Co., Ltd., are supplying two electric coal wagons to Derby Town Council, at £2,810.

Swansea Electricity Committee have recommended the acceptance of the tender of James Howden & Co., Ltd., for a turbo-alternator, at £15,387.

The Murphy Submarine Pipe Line and Flexible Tube Co., Ltd., have sold to the London County Council two gas storage cylinders at £15 each, less 20 per cent., for use in connection with motor lorries of the tramways department. Gas is being substituted for petrol for working the lorries.

Contracts at Greenwich Power Station.—Arrangements have been made for the following work at the Greenwich station of the London County Council tramways.—E. Bennis and Co., Ltd., 1,450 chain grate links (£65 8s. 2d.); Babcock and Wilcox, Ltd., 8,000 common links and 3,000 driving links for the boilers (£417 2s.); Stirling Boiler Co., Ltd., 98 super-heater tubes for the boilers (£85 15s.); J. Keith and Blackman Co., Ltd., two cast iron fan cases for the ash dust removal plant (£27 10s.)

Fittings for L.C.C. Tramways.—The undermentioned tenders have been accepted by London County Council,—Cotton-covered copper wire—London Electric Wire Co. and Smiths, Ltd. (£925); Midland Electric Wire Co. (£5,740). Iron castings — John Crowley and Co., Ltd. (£250). Re-winding armatures for tramcars — P. R. Jackson and Co. (£476 5s.); Drewer, Stevenson and Co. £224 5s.); British Westinghouse Electric and Manufacturing Co., Ltd. (£167 10s.); H. Dunn and Son (£340); Armature Repair Co., £18 5s.); Electrical Repair Co. (£360); Burdette and Co. (£315); Collins Electrical Co., Ltd. (£160) Supply of field coils for tramcar motors—Tenders were received from the undermentioned firms for the supply of 500 of each of two types (classes 200 and 220), and 200 of each of two types (classes 3A and 25A) of field coils for tramcar motors—Manchester Armature Repair Company; Brush Electrical Engineering Co. Ltd.; British Westinghouse Electric and Manufacturing Co., Ltd.; the Armature Repairing and Supply Co. Ltd.; Johnson and Phillips, Ltd.; and the Electrical Repair Co. The Highways Committee accepted the offers of the Manchester Armature Repair Company for the supply of all the types of coils, except those of class 200, the offer of this firm being accepted for 200 coils of this type, the remainder (300) being obtained from the Brush Electrical Engineering Co., Ltd. The total expenditure involved will amount to about £8,080. Truck sides for tramcars.—Eight truck sides for tramcars of the type principally used on the Council's tramways, Hurst, Nelson, and Co., Ltd., Motherwell, at £14 each. Driving wheel centres—Hadfields, Ltd., supply of 100 driving wheel centres (iron castings) at £4 17s. 6d. each.

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

DIVIDENDS PREV.	DIVIDENDS LAST.	NAME.	PAID.	PRICE, JULY 27, 1914.	CASH Feb. 7 or previous.	A WEEK AGO.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	70⅜	71⅜
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅞	56/3	57/6
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4¼	42/9	49/9
4%	4%	Do. 4% Deb.	100	91	68¼	68½
4½%	4½%	Do. 4½% Deb.	100	98½	69	68¼
5%	5%	Do. 5% Deb.	100	96	66	67
—	—	Associated Omnibus Co., Ord. ..	5/-	3/8	1/1½	1/1½
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1 1/16	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	100	100
—	1/-	Bath Electric Trams Pref. Ord.	1	¼	3/	3/-
6d.	6d.	Do. 5% Cum. Pref. ..	1	7/16	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	70	70
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	20¼	20¼
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11⅜	9¾	9¾
4½%	4½%	Do. 4½% Deb.	100	96	75	75
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	45⅝	44½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	88½	89⅛
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5⅜	5⅜
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	77/6	77/6
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	90½	90½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	29½	29½
6%	5%	Do. Pref. Ord.	100	106	29½	29½
5%	5%	Do. 5% Cum. Pref. ..	100	103	45	45
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	85	84½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	59⅝	59½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	34	31½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	73½	72⅝
5%	5%	Do. 5% Deb.	100	92	77½	78
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	72⅜	72⅜
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6 1/16	6 1/16
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	81/3	81/3
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	72⅜
1/-*	1/-*	Cape Elec. Trams.	1	1/16	12/3	12/3
1/3	1/3	City of B. A. Trams	5	5½	80/-	83/9
4%	4%	Do. 4% Deb.	100	97½	69	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	85	85
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	80¾	80½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
5/-	4/-	Dublin United Trams. Ord. ..	10	8	7½	7¼
6/-	6/-	Do. 6% Pref.	10	12	10⅞	11
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/1	1/1⅛
1/2⅜*	1/2⅜*	Do. 6% Cum. Pref. ..	1	3/16	10/3	10/4⅛
4½%	4½%	Do. 4½% Deb.	100	67⅜	53	53
1/1½	5⅜d.	Hong Kong Tramway	5/-	7/16	17/9	17/9
5%	5%	Do. 5% Deb. ..	100	87⅛	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44⅜	44⅜
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	3/8	2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co. ..	10	10½	9⅞	9⅞
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85⅜	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79⅜
9⅜d.*	9⅜d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
--	1½l.	London & Sub. Traction Ord. ..	1	13/64	2/3	2/3½
6d.	6d.	Do. 5% Pref.	1	1/16	6/4½	6/3
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75⅜	61½	62½
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80½	80½
5%	5%	Do. 5% Inc. Deb.	100	88½	77⅛	79
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	37	37⅛
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	87½	87½
7½d.%*	9⅜d.*	Manaos Trams & Ltg. Ord. ..	1	3/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	71	71
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	72⅜	72⅜
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70½	70
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	28½	28½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	39	39
—	—	Do. 6% Mt. Bds. ..	100	76	25½	25½
4½%	4½%	Montreal St. 4½% Stg. Dbs. ..	100	100	88½	91½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	1/32	16/3	17/3
9⅜d.*	9⅜d.*	New General Traction	1	⅛	7/3	7/3
8⅜d.	6d.	Northern Gen. Trans. Ord. ..	1	3/32	12/9½	12/9½
6/-*	3/-	Para Elec. Rlys. Ord.	5	4½	80/-	79/4½
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	5/10½	5/10½
—	—	Do. 7% Non. Cm. Part Pf.	1	—	12/9	12/7½
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7⅜d.*	8⅜d.*	Potteries Elec. Trac. Ord. ..	1	1/16	6/9	6/9
6d.	6d.	Do. 5% Pref.	1	1/32	12/-	12/-
8d.	1/4	Provincial Trams. Ord. ..	1	¼	20/3	20/3
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	88/9
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	81	81
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	86⅜	86½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89⅜	75⅜	76
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86⅜	86⅜
5%	5%	Do. 5% Perp. Deb. ..	100	99½	73½	75
12/-	10/-	Shanghai Elec. Cons.	10	13	14⅜	14⅜
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/7	4/7
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	88	88
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	91¾	91¾
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77⅛	77⅛
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	31/3	31/3
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	66	66
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅜	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅜	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	76½	76½
—	—	Metropolitan Dist. Ord. ..	100	21⅜	15 15/16	15 15/16
—	—	Undgd. Elec. Rys. of London ..	10	21½	33/1½	36/3
		Do. "A"	1/-	⅜	5/-	5/-
4½%	4%	Do. 4½% Bds. of 1933 Rd.	—	99	103	102½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	102½	101½
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	81⅝	82

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C. ..	Jan. 29	373	493	+ 120	43	19,440	+ 2,001
Aberdeen Corporation ..	„ 30	1,728	2,262	+ 534	35	75,913	+ 8,956
Ayr Corporation ..	Feb. 2	253	337	+ 84	38	17,864	+ 2,236
Belfast City	„ 1	5,371	7,347	+ 1,976	44	290,136	+ 39,427
Birkenhead Corporation	„ 3	1,441	1,851	+ 410	44½	81,294	+ 13,220
Birmingham Corporation	Jan. 26	15,426	19,851	+ 4,425	43	797,035	+ 112,477
do. Motor Omnibuses ..	„ 26	834	1,166	+ 332	42	45,840	+ 3,446
Blackburn Corporation ..	„ 30	969	1,639	+ 670	44⅔	65,961	+ 11,258
Bournemouth Corporation	Feb. 6	1,716	2,308	+ 592	44⅔	113,375	+ 12,182
Bradford Corporation ..	Jan. 26	5,939	7,472	+ 1,533	43	329,763	+ 37,493
Burnley Corporation ..	Feb. 2	1,480	1,938	+ 458	..	..	..
Burton-on-Trent Cor. ..	„ 3	256	376	+ 120	44	14,139	+ 1,816
Bury Corporation ..	„ 3	1,228	1,596	+ 368	44½	72,352	+ 9,617
Chatham & District ..	Jan. 24	1,021	1,176	+ 155	4	3,706	— 104
Cork Electric	„ 31	427	573	+ 146	5	2,407	+ 387
Derby Corporation ..	Feb. 2	981	1,306	+ 325	44	53,672	+ 4,174
Dublin United	Jan. 25	5,779	7,100	+ 1,321	4	24,948	+ 3,192
Dundee City	„ 30	1,267	1,564	+ 297	37⅓	57,907	+ 6,095
East Ham Corporation ..	Feb. 2	1,098	1,287	+ 189	44	60,252	+ 7,762
Exeter Corporation ..	„ 1	303	358	+ 55	44	17,557	— 761
Glasgow Corporation ..	„ 2	23,081	26,610	+ 3,529	35⅔	922,519	+ 103,453
Glossop (U.E. Sup. Co.) ..	Jan. 26	122	177	+ 55	4	688	+ 167
Halifax Corporation ..	„ 29	1,788	2,316	+ 528	43⅔	106,305	+ 10,547
do. Motor Buses ..	„ 29	45	53	+ 8	43⅔	2,140	— 25
Hastings and District ..	Feb. 4	765	971	+ 206	5	4,587	+ 110
Huddersfield Corporation	„ 2	2,554	3,143	+ 589	44	140,636	+ 16,422
Ilford U.D. Council ..	„ 2	555	731	+ 176	44	33,601	+ 4,159
Ipswich Corporation ..	Jan. 26	352	579	+ 227	43	28,770	+ 7,167
Isle of Thanet ..	Feb. 2	150	200	+ 8	18	3,030	— 1,517
Kilmarnock Corporation ..	„ 2	158	224	+ 66	37⅓	7,714	+ 1,079
Lanarkshire	Jan. 31	2,260	2,952	+ 692	5	12,787	+ 1,586
Lancashire United	„ 30	1,645	2,546	+ 901	5	10,328	+ 2,746
Leeds City	Feb. 2	9,187	10,728	+ 1,541	44	485,725	+ 54,891
Leicester Corporation ..	Jan. 19	3,190	4,256	+ 1,066	..	..	..
Leyton U.D. Council ..	„ 31	1,441	1,744	+ 303	44	81,886	+ 11,337
Liverpool Corporation ..	„ 26	13,480	16,497	+ 3,017	3⅔	60,173	+ 7,060
Llandudno & Colwyn Bay ..	„ 25	160	215	+ 55	8	1,784	+ 222
London County Council	Feb. 6	39,076	52,747	+ 13,671	44½	2,455,055	+ 339,866
Maidstone Corporation ..	Jan. 31	158	247	+ 89	44	10,801	+ 1,316
Manchester Corporation	Feb. 2	17,642	23,576	+ 5,934	44	925,188	+ 101,987
Nelson Corporation ..	Jan. 26	188	244	+ 56	43	10,125	+ 981
Newcastle-on-Tyne Cor.	Feb. 2	6,744	8,408	+ 1,664	44	347,398	+ 51,514
New St. Helens & Dist. ..	Jan. 30	901	1,284	+ 383	31	43,400	+ 10,022
Northampton Cor. ..	Feb. 1	664	867	+ 203	44	37,072	+ 5,332
Nottingham Corporation	Jan. 31	3,623	4,943	+ 1,320	44	196,959	+ 25,709
Oldham Corporation ..	Feb. 3	2,112	2,908	+ 796	45	126,917	+ 17,706
Portsmouth Corporation	„ 2	1,931	2,597	+ 666	..	..	..
Provincial	Jan. 26	1,750	2,479	+ 729	16⅔	39,274	+ 5,569
Reading Corporation ..	„ 31	761	1,065	+ 304	44	46,596	+ 8,871
Rhondda Tramways ..	„ 17	1,225	1,331	+ 6	3	3,367	+ 140
Rotherham Corporation	Feb. 6	1,586	1,928	+ 342	45⅓	81,459	+ 11,672
Salford Corporation ..	„ 4	4,979	6,902	+ 1,923	44⅔	293,580	+ 54,087
Sheffield Corporation ..	„ 3	10,747	12,851	+ 2,104	45	545,549	+ 69,413
Southampton Cor. ..	Jan. 30	1,467	2,230	+ 768	42⅔	90,465	+ 17,314
Southend-on-Sea Cor. ..	„ 30	565	674	+ 109	44	38,893	— 902
South Shields Cor. ..	„ 19	792	953	+ 161	42	40,346	+ 4,837
Sunderland Corporation..	Feb. 3	1,520	1,934	+ 414	44	81,778	+ 8,702
Sunderland District ..	Jan. 10	762	726	— 36	10	4,382	+ 806
Swindon Corporation ..	Feb. 6	182	287	+ 105	44⅓	12,206	+ 2,960
Torquay Tramways ..	Jan. 17	482	588	+ 106	3	1,500	+ 247
Tyneside Trys. & Trmrds.	„ 23	588	730	+ 142	4	2,426	+ 393
Wallasey Corporation ..	Feb. 2	1,113	1,437	+ 324	44⅔	69,107	+ 9,153
Walsall Corporation ..	„ 2	764	1,079	+ 315	44	44,009	+ 7,808
Walthamstow U.D. Coun.	„ 2	873	1,094	+ 221	44	53,744	+ 6,398
Warrington Corporation	Jan. 17	497	709	+ 212	42	24,508	+ 3,477
West Ham Corporation	„ 31	2,869	3,534	+ 665	43⅔	160,049	+ 19,711
Wigan Corporation ..	„ 31	1,603	2,221	+ 617	44	89,461	+ 15,102
Yorkshire (West Riding)	Feb. 3	1,807	2,263	+ 456	5	11,180	+ 2,327

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREICN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Feb. 4	£47,614	£50,620	5	£260,035	+ £13,472
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Dec. 2	3,090	3,179	36	28,844	+ 214
Brazilian Traction (Mlrs.)	Nov.	7,160,000	7,695,000	47	84,131,000	+ 6,558,000
Brisbane	Dec.	32,910	35,019	52	396,339	+ 6,269
British Columbia .. $	Dec.	496,959	555,555	26	2,923,660	+ 258,275
Buenos Aires Lacroze ..	Dec.	40,106	40,901	26	230,476	— 419
Burmah Tram. & Light Rs.	Dec.	32,551	26,224	21	135,822	— 1,483
Calcutta .. .. Rs.	Feb. 2	67,257	71,435	5	348,594	+ 7,498
Cape Town	Dec.	..	19,803	..	..	..
Carthagena and Herrerias	Jan.	3,982	4,011	4	4,011	+ 29
Cordoba	Nov.	12,836	13,339	34	108,715	— 2,137
East India	Jan.	1,836	1,176	26	7,449	— 5,574
Hong Kong .. .. $	Dec. 1	12,173	12,561	48	647,597	— 38,825
Kalgoorlie	Sept.	2,788	3,063	39	24,128	+ 861
La Plata	Jan.	4,315	4,711	4	4,711	+ 396
Lima	Dec.	37,171	41,697	52	438,895	+ 30,725
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Jan. 15	36,493	37,736	2	37,736	+ 1,243
Manila .. .. $	June	59,432	73,900	..	..	..
Manaos	Oct.	..	158,078	..	..	..
Montevideo	Jan.	33,341	36,016	13	101,101	+ 7,992
Pernambuco	Feb. 3	3,655	4,759	5	23,505	+ 5,636
Peruvian .. .. $	Jan.	935,130	1,189,350	30	7,277,620	+ 836,998
Port Elizabeth	Dec.	..	4,920	..	..	..
Rangoon	Jan.	4,633	5,361	4	5,361	+ 728
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Dec. 15	13,297	12,548	50	643,405	+ 11,654
Toronto .. .. $	Nov.	911,829	1,052,000	47	10,986,998	+ 1,161,954
Winnipeg .. .. $	Nov.	282,899	305,881	47	3,039,397	+ 16,227

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THE Tramway & Railway World
WITH MOTOR TRAFFIC SECTION

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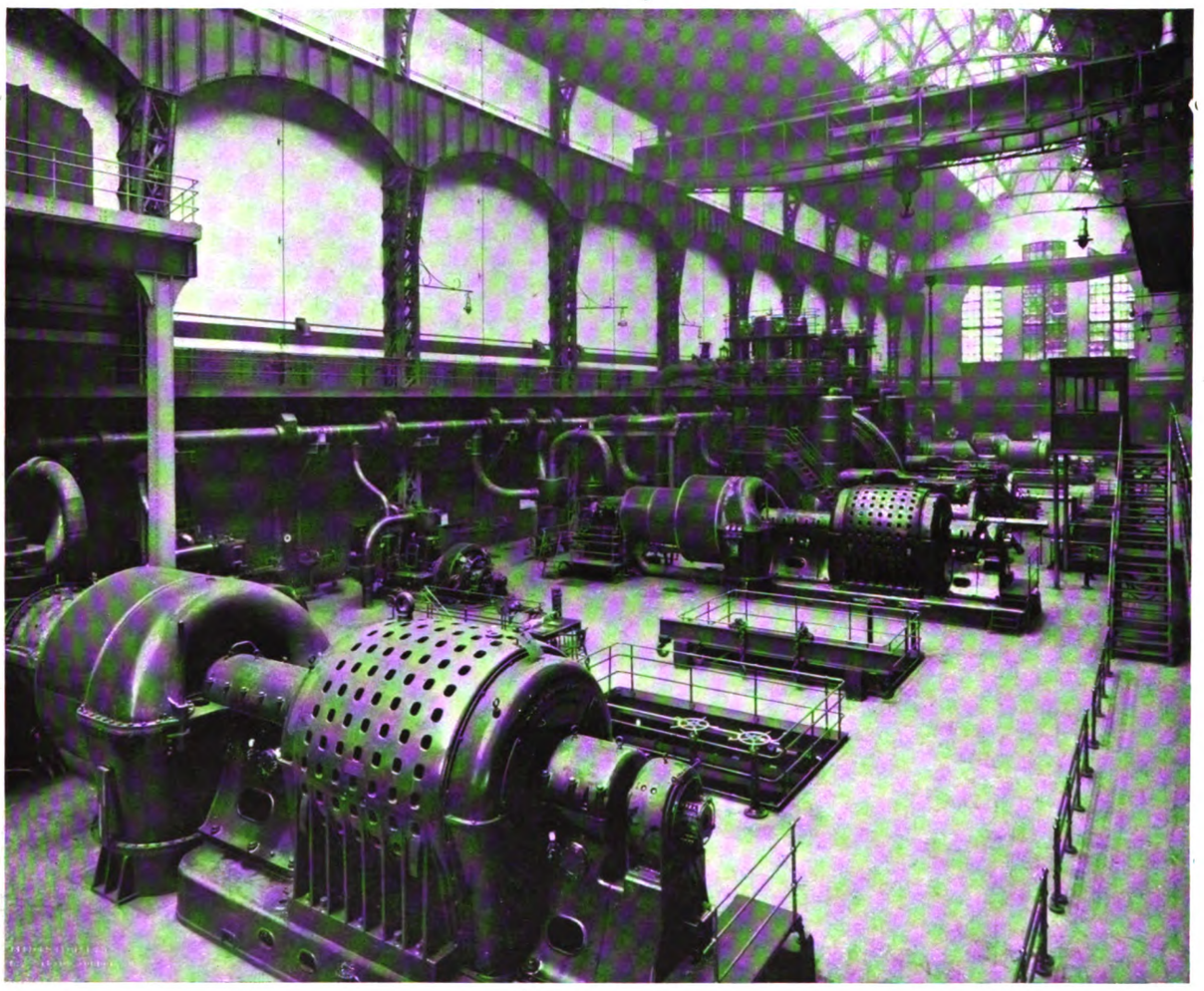
LONDON COUNTY COUNCIL TRAMWAYS GENERATING STATION.

ALTERATIONS AND ADDITIONS AT GREENWICH POWER-STATION, 1910-1917.

Within the past few years numerous additions and modifications have been made to the plant in the London County Council's tramway generating station, in order to meet the increase in the tramway load, and to secure greater economy in plant operation. By the courtesy of Mr. A. L. C. Fell, general manager, we are enabled to give a brief account of the changes that have been effected and to publish a plan and illustrations of the engine room as now arranged. The area of the districts and the tramway routes supplied with power from the Council's station are shown on the accompanying map, the length of line (route miles) now in operation being approximately 142, of which 122 are constructed on the conduit system and 20 on the overhead system.

Since 1910, owing to increased services and new routes opened to traffic, the tramway peak load has increased from 26,500 KW. to 34,000 KW., of which latter load about 2,000 KW. is at present provided by the London Electric Supply Corporation's power-station at Deptford. As a consequence, the present load on the Council's station is about 32,000 KW., and would have been considerably higher had it not been found necessary to cut down services in war time.



View of Engine Room of Greenwich Power-Station—Dick-Kerr Turbo-Alternators in the Foreground.

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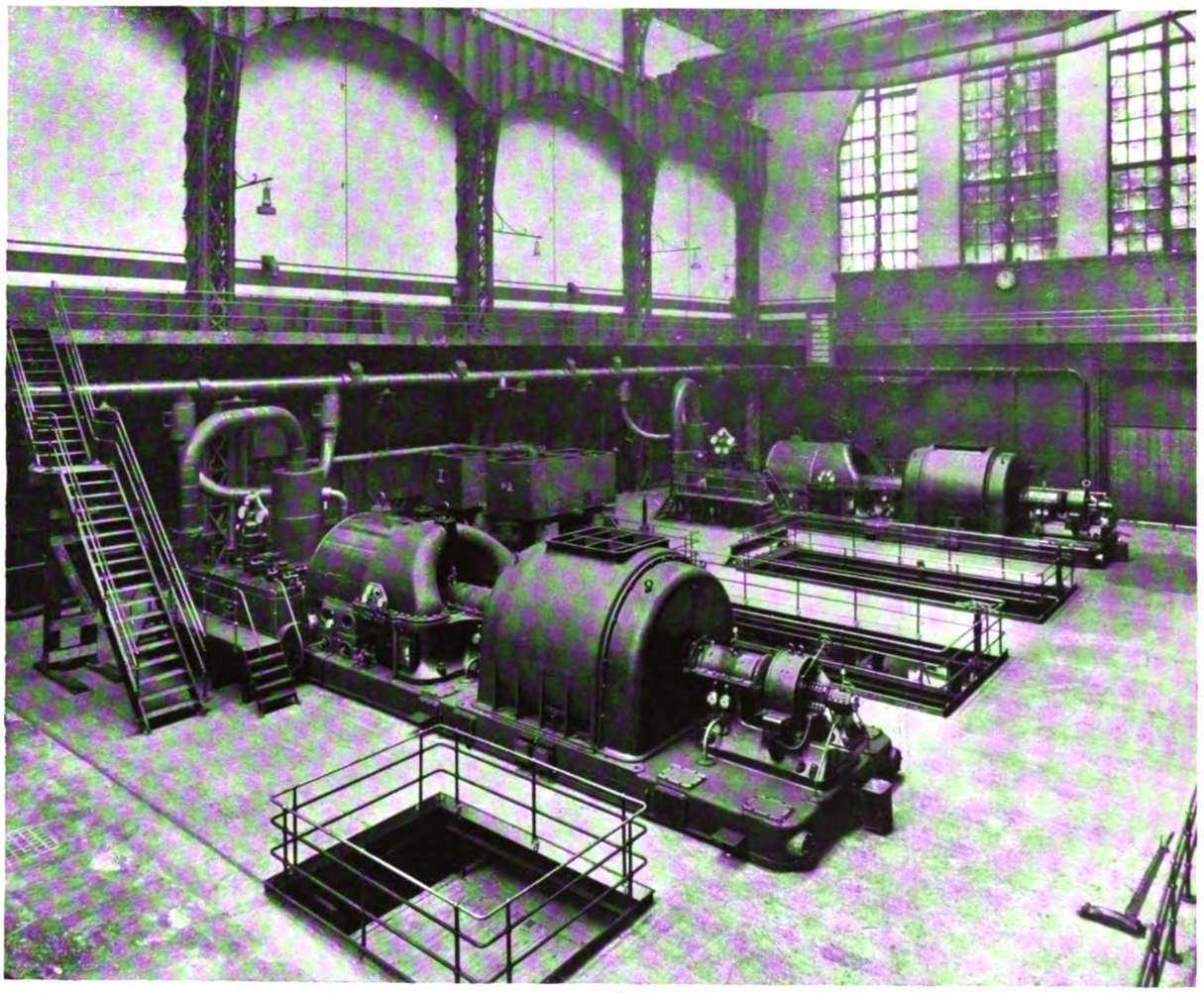
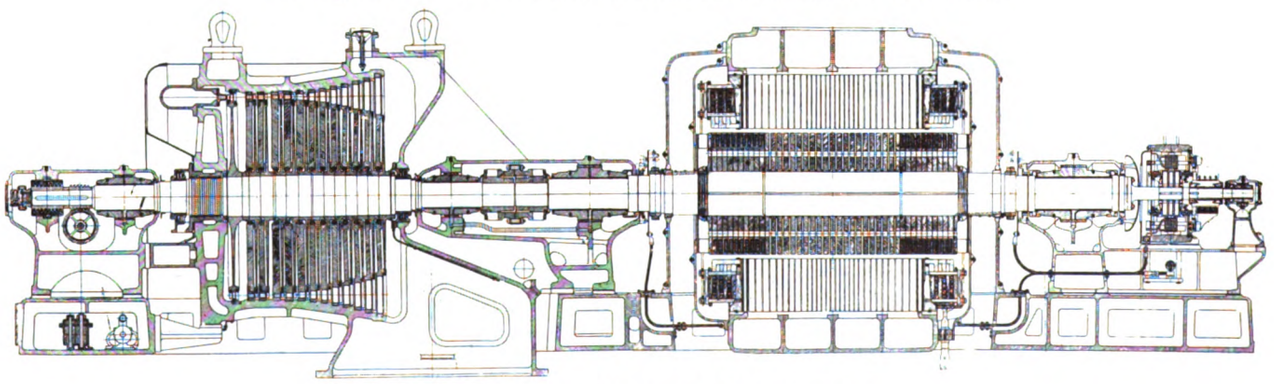
Typical load curves are given on page 92, showing the character of the load on an ordinary weekday as compared with that on a Saturday or Sunday, and are interesting as indicating the general movements of the inhabitants of London.

The plant in 1910 consisted of four vertical horizontal reciprocating engines, coupled to three-phase

and is still, equipped with 48 boilers, 24 being Stirling boilers, having an actual steaming capacity of 15,000 lb. per hour, and 24 Babcock and Wilcox boilers, with a capacity of 18,000 lb. per hour. They are arranged in eight groups of six per group with corresponding economisers, three per group, and were originally fitted for natural chimney draught throughout.



Westinghouse 8,000-KW. Turbo-Alternators in Greenwich Power-Station.



Section of the Westinghouse Turbo-Alternator.

25 period alternators of 3,500 KW. capacity, at a power factor of 0·94 and four turbo-alternators, of the Willan-Dick Kerr type, each of 5,000 KW. capacity at a power factor of 0·85, the total normal capacity being 34,000 and the total overload capacity 42,500 KW. Allowing one reciprocating and one turbine set as spares, the maximum working capacity was not more than 30,000 KW. The boiler-house at that time was,

In order to meet the increased demand for power, and the increased need for economy, due to the rising cost of fuel, it has been found necessary during the past few years to arrange for the replacement of the four original 3,500 KW. reciprocating sets by turbine units of 8,000 KW. normal and 10,000 KW. overload capacity at a power factor of 0·90. Two of these turbine sets have already been installed, and are in

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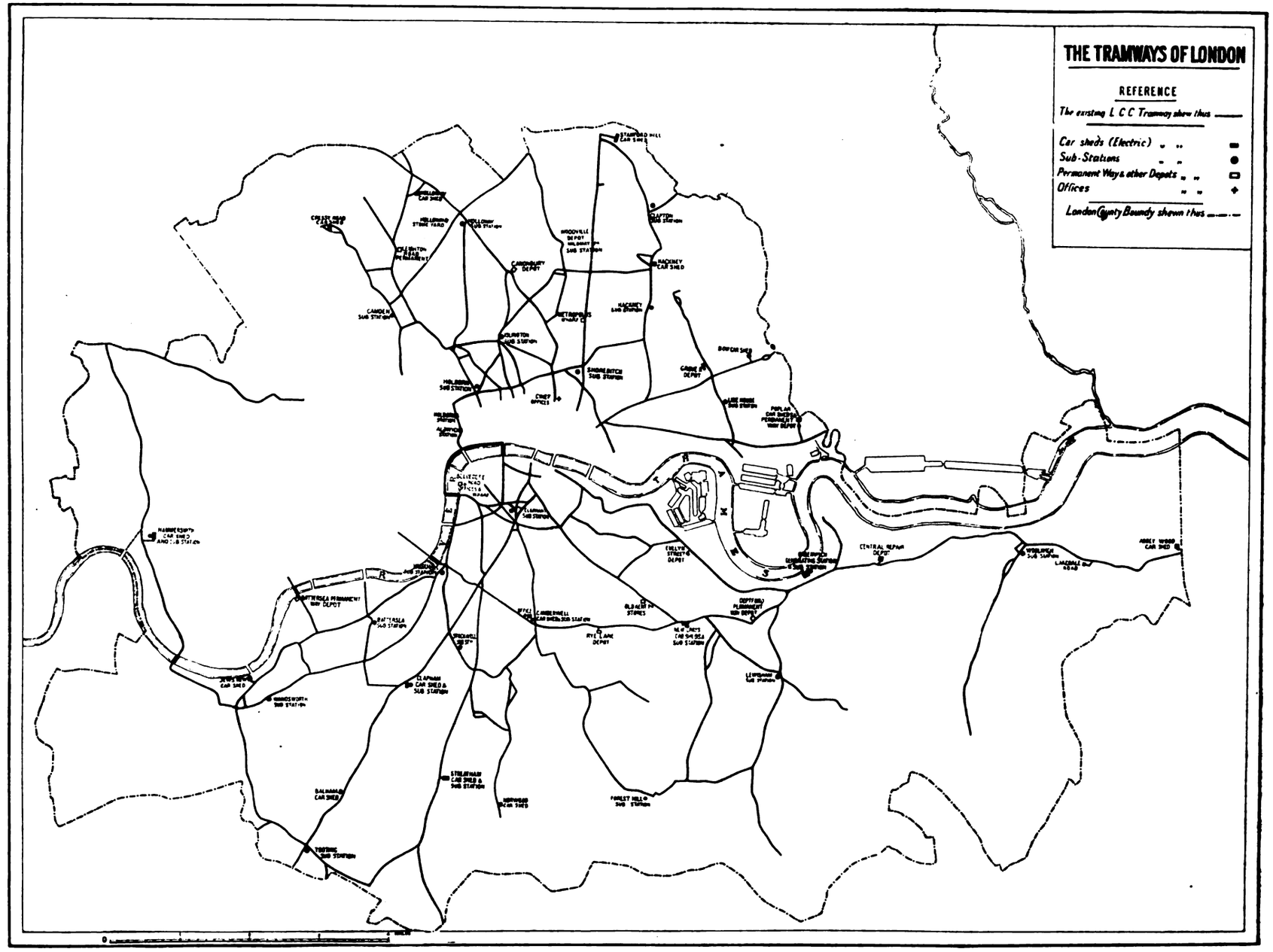

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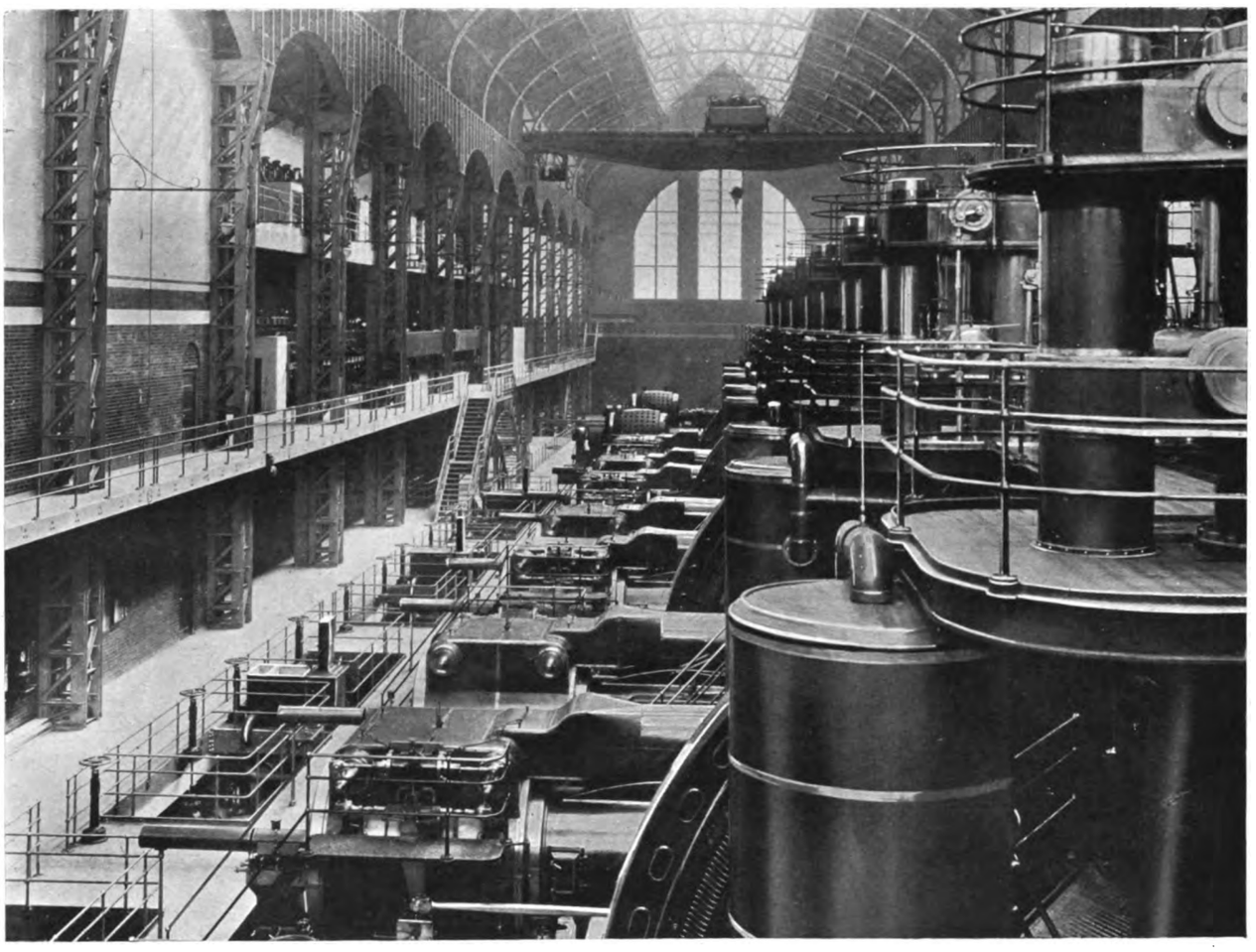
operation, whilst a third set is in course of erection, leaving only one of the original reciprocating sets in use.

When the four new sets are installed the normal capacity of the station plant will be 52,000 KW., and, allowing for spares, the maximum working capacity will be about 45,000 KW. The new turbines are of the impulse type, running at 1,500 revolutions per minute, supplied by the British Westinghouse Electric and Manufacturing Company, and guaranteed to give a steam consumption of 12½ lb. per kilowatt hour, with steam at 180 lb. pressure per square inch, and a temperature of 550 deg. Fahr. The generators are wound for 2,200 volts, this pressure being raised to the bus bar voltage of 6,600 volts by means of an auto-transformer, which also provides extra reactance in the stator circuit. The condensing plant has also been provided by the same firm, the Le Blanc air pump and the extraction pump being a combined set driven by a steam turbine, while another steam turbine drives the centrifugal pump supplying, at overload, 13,000 gallons of cooling water per minute through a "Deptford" rotary filter made by the London Electric Supply Corporation, to a condenser having 20,000 square feet of cooling surface.

In order to provide cooling water for the condensers of the first two sets, a tunnel of 6 ft. 3 in. internal diameter, with a vertical diametrical division, was built between the station and the river, arranged so that either side could be used as suction or discharge. Now that the third set is being erected, a second tunnel of the same diameter is being built, and is now nearing completion. This second tunnel has no vertical division, as the arrangement is that either complete tunnel can be used alternatively as a suction or a discharge. The two tunnels are designed to provide cooling water for the four 8,000 KW. sets to be ultimately erected, and the work is being carried put by Messrs. John Cochrane and Sons. The new condensing water arrangement involves considerable alterations to the existing pipework. These alterations are now proceeding, the work being in the hands of the Brightside Foundry and Engineering Company, Limited.

In the boiler-house several improvements have been, or are in process of being, carried out. Owing to an objection raised by the Greenwich Observatory, the two southern chimneys could not be carried up to the same height of 250 feet as those on the northern half of the station, and were finished off at a height of 200 feet. To provide the loss of chimney draught on the 24 Babcock and Wilcox boilers from which the waste gases were led into the short chimneys four induced draught fans, one for each group of six boilers, have been installed between the economiser outlets and the chimneys, and discharge the gases into the chimney base, raising the draught at the boiler uptake dampers from the original maximum of about ⅜ in. to a maximum of about 1⅜ in. The fans were supplied by Messrs. Davidson and Company, Limited, of Belfast, and were erected, as shown on the plan, on galleries built, on the one hand, in the engine-room as an open platform and, on the other hand, on the western side of the boiler-house in an extension to the main building, which extension also provides much needed additional workshop and lavatory accommodation for the boiler house staff.



Horizontal Reciprocating Engines, of which all but one have now been Replaced by Turbo-Generators.

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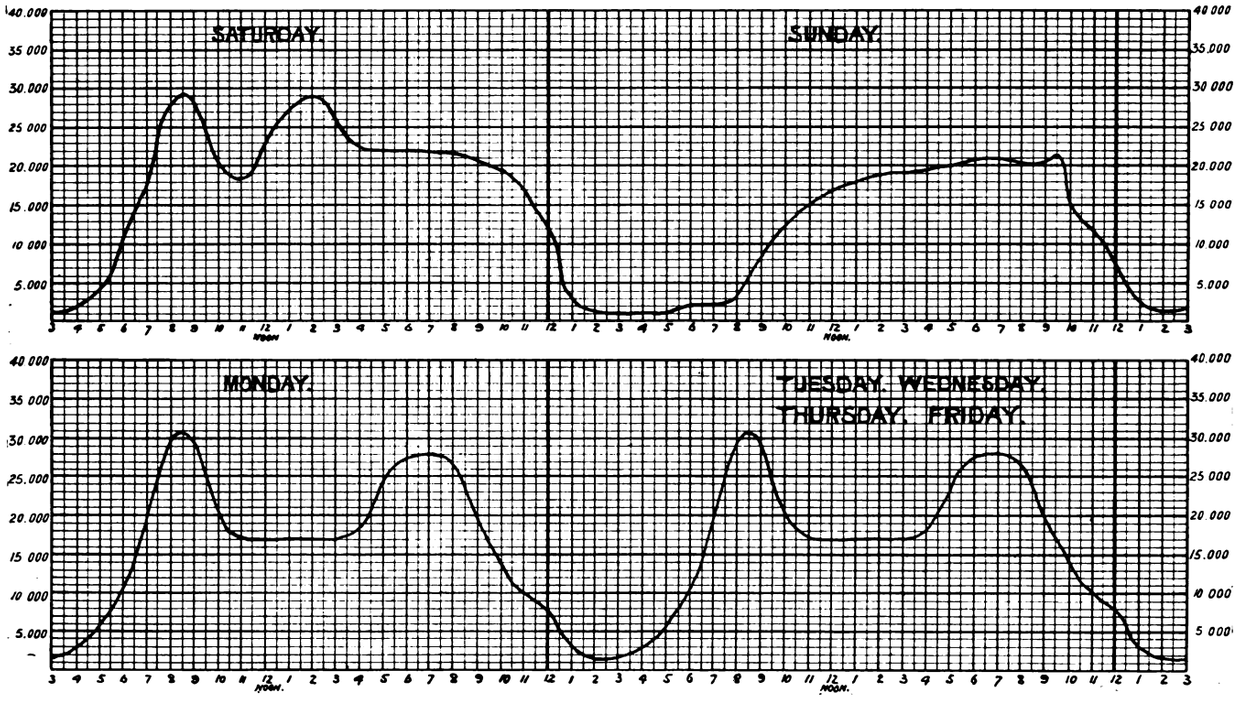
These four fans having increased the steaming capacity of the 24 Babcock and Wilcox boilers at the southern end of the station by 10 to 12 per cent., while the large turbine sets are erected at the northern end of the engine-room, it became necessary to duplicate the 12 in. steam header which runs the whole length of the engine-room, and a new 12-in. main has now been erected immediately above the original one, to which it is connected by three large flexible bends.

Further, to increase the steaming capacity of the boiler-house it has been considered advisable to increase the grate area of the mechanical stokers under the Stirling boilers. With a heating surface on the average of 3,400 square feet, including superheaters, the grate area as originally installed for burning washed and screened nuts was 56 square feet, being a ratio of 60 to 1, and as a preliminary measure in the direction of burning lower grade coals and low volatile fuels, such as gas coke, four of these boilers have been fitted with stokers of the Underfeed Stoker Company's travelling grate pattern, with a grate area of 100 square feet per



Typical Load Curves of Greenwich Power-Station on an Ordinary Week-day Compared with Saturday and Sunday.

boiler. These grates are fitted with forced draught available from motor-driven fans.

Experiments are being conducted in the burning of ordinary gas coke as obtained from a neighbouring gas company, cut or crushed to suitable size. Two motor-driven fans supply air to a trunk main from which one or more of the four boilers can be supplied, and one fan alone will supply sufficient air for three boilers. The speed of the motor, and consequently the amount of air pressure, can be adjusted from the firing floor, thus placing the regulation of both the forced and chimney draught within easy reach of the operator.

In order to maintain the same equivalent coal storage capacity with the increased coal consumption, the coal bunkers have been extended in number and size by erecting at the sourthern end of the station a new bunker to store 1,000 tons of coal and by raising the level of the existing bunker sides to increase the working capacity of the original bunkers. Additional bunkers have been erected at the northern end of the boiler-house for the storage of ashes. These have been arranged so that the ashes can be removed by road, if necessary, as well as by barge. In order to facilitate unloading the steamers the jetty head has been extended several feet at the up-river end, and to deal with any large or rough coal obtainable in war time, two large motor-driven crushers, with a capacity of 30 to 35 tons an hour each, made by Messrs. W. J. Jenkins and Company, Limited, of Retford, have been erected immediately over the pier bunkers.

Several modifications have been made on the switch-gear, following the introduction of larger generating units. The main generator cubicles and switches have been reconstructed so as to give greater clearances between phases and earth and larger contact and connector areas for the larger currents now carried. All three-core lead-covered or single-core vulcanised indiarubber-covered cables have been withdrawn and replaced by single-core lead-covered cable.

The main bus bars were in two halves, connected by a bus-bar coupling switch. The coupling switch has been replaced by one of very much larger capacity, supplied by the British Thomson-Houston Company, while oil-immersed reactance coils have been installed between the two halves of the main bus bars in each phase. Reactance coils have also been installed in the circuits of the original turbo-generators, which generate at 6,600 volts without the addition of auto-transformers.

The potential transformers have been moved into separate cell work arranged on the top switchboard gallery with fuses and isolating links in each transformer circuit, and this work has been carried out by Messrs. Ferguson, Pailin and Company.

Complete new generator control panels are being erected and equipped for the three large turbo-generator units, and will be extended for the other five sets after the war. The panels are made by the British Westinghouse Electric and Manufacturing Company, Limited, and are of flat-back type, so as to render the somewhat complicated instrument and control wiring more accessible for inspection and cleaning than was

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the case with the original closed-in desk type now being discarded. The pilot circuits between the panels and the generators are run as multicore lead-covered cables. Brown-Boveri regulators have been connected in circuit with the rheostats for controlling the three large generators, and will be put into use immediately the greater proportion of the station load can be taken by sets to which the regulators are fitted. Mertz-Price relays are fitted in the circuit of each generator.

In addition to the above, a considerable number of improvements, alterations, or additions have been made to the plant during the past few years.

PRACTICAL NOTES ON LAYING OUT LIGHT RAILWAYS.

By J. Owen, A.M.Inst.C.E.

Preliminary Work.

On most light railways the route is largely determined by the limiting gradient, as banks and cuttings are naturally greater factors than in the case of main line railways. A six-inch ordnance map, contoured at ten-foot intervals of height, will be found extremely useful. For example, if the limiting grade be fixed at 1 in 50, a length scaling 500 ft. is pricked off by dividers from contour to contour, and curves arranged to pass approximately through these points. A preliminary line is staked out, levels taken and plotted, the line being subsequently modified according to local conditions.

Changes of grade, unless very slight, should be eased by the introduction of vertical curves. If the curves be plotted to a fairly large scale (natural), the vertical heights at the desired points may be scaled with sufficient accuracy, thus avoiding tedious calculation and the introduction of unnecessary refinement.

Curve Ranging.

Although a curve may be set out without the angle of intersection of tangents being ascertained, no saving of time will ultimately be effected thereby.

If no instrument for measuring angles, such as the theodolite or box sextant, be available, the angle may be measured with sufficient accuracy for all practical purposes with chain and tape as follows :—

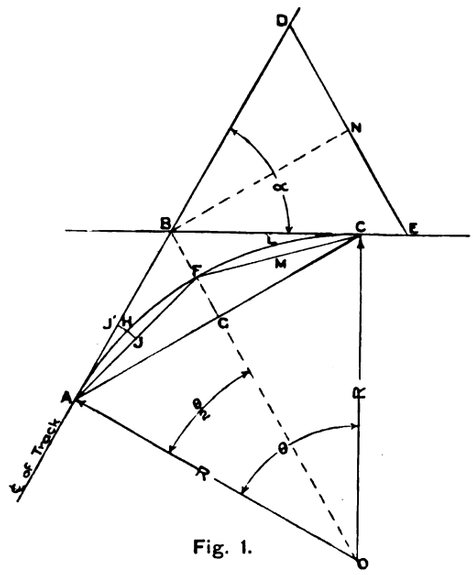

Fig. 1.

Produce tangent AB to D, so that BD = 100 ft. (or any convenient multiple of 10), and mark off BE = BD. Then angle DBE (α), Fig. 1, may be found in table of chords given in any reliable book of mathematical tables from the ratio $\frac{DE}{BD}$.

As a test, an angle measured in this manner with BD = BE = 100 ft., the chord DE was found to be 25 ft. 9 in. = 25·75 ft., giving ratio $\frac{DE}{BD}$ = ·2575 ; the corresponding angle in table of chords being 14° 48′. The angle, when taken with the theodolite, was read 14° 49′, or an error of only one minute by chain and tape method. While the foregoing error may, perhaps, be considered unusually small, the result sufficiently demonstrates the value of the method.

As angles BAO and BCO (Fig. 1) are right angles, it follows that $\alpha = \theta$.

Tangent length AB = R × tangent $\frac{\theta}{2}$, where R = radius of curve in feet, and AB = BC.

Centre of curve F may be found by bisecting angle ABC (= 180° − α) and setting off BF = R(Sec. $\frac{\theta}{2}$ − I).

In situations where point of intersection B may, for any reason, be inaccessible, the centre of curve may be found by setting out versed sine FG bisecting chord AC at right angles. The chord length AC equals R multiplied by value given in table of chords for angle θ, and versed sine FG equals R multiplied by value given in table of versed sines for angle $\frac{\theta}{2}$.

If a table of versins be not available, the same result may be obtained from either of the formulæ V = R (I − Cos $\frac{\theta}{2}$), or V = R − $\sqrt{R^2 - (\frac{1}{2}C)^2}$ (see Fig. 2).

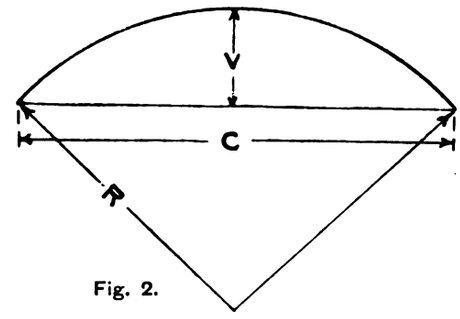

Fig. 2.

Three points on the curve having been obtained, viz., at centre and each end of curve, intermediate points may be obtained by similar methods.

Thus :—Chord AF = R × tabular value of chord for angle $\frac{\theta}{2}$ (see Fig. 1), and versins HJ and LM = R × tabular value of versin for angle $\frac{\theta}{4}$.

This process may be continued until the desired number of points on the curve has been obtained.

Where θ does not exceed 30°, or chord AC is not greater than $\frac{R}{2}$, HJ may be set off equal to $\frac{FG}{4}$, and a versin midway between A and J equal to $\frac{HJ}{4}$.

This method will give results quite as close as the platelayer may reasonably be expected to attain, the maximum possible error in HJ being 0·5 per cent.

It is interesting to note that if mathematical tables are not available, all the functions of angle $\frac{\theta}{2}$ (Fig. 1) required for setting out the curve may be obtained on the site, when measuring angle of intersection by chain and tape method, as previously explained.

Thus, for angle $\frac{\theta}{2}$:- $\frac{DN}{BN}$ = tan., $\frac{DN}{BD}$ = sin., $\frac{BN}{BD}$ = cos., $\frac{BD}{BN}$ = sec., and versin = 1 − cos.

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Where the versin is small and only one further subdivision of points on the curve is desired, satisfactory results may be achieved by off-setting ¾V at quarter points on the chord, as shown in Fig. 3.

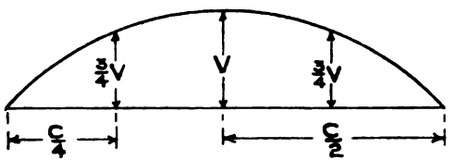

Fig. 3.

Keeping the radii in round figures naturally facilitates the calculation of data. For example, with a radius of 250 ft. the tangent lengths, chords, and versins are quickly obtained by turning up the natural functions of any given angle, multiplying by 1,000, and dividing by 4.

It would, perhaps, be unnecessary to mention such an obvious short cut, but for the fact it is so frequently overlooked.

A fully worked out example will best demonstrate the utility of the foregoing notes.

Given radius = 500 ft. and $a = 62° 20'$ (see Fig. 1),

Tangent length $AB = R \times \tan \frac{\theta}{2} = 500 \times \tan 31° 10'$

$= 500 \times .60482 = 302.41$ ft.

$BF = R(\text{Sec} \frac{\theta}{2} - 1) = 500(\text{Sec } 31° 10' - 1)$

$= 500 \times .16868 = 84.34$ ft.

Chord $AF = R \times$ chord $31° 10' = 500 \times .53728 = 268.64$ ft.

Versin $HJ = R \times$ versin $15° 35' = 500 \times .03676 = 18.38$ ft.

The versin midway between A and H is, by calculation, 4·61 ft., and by dividing HJ by 4 = 4·59 ft., or an error of only ¼ of an inch.

In some instances it may be desired to first locate the ends and centre of curve, and after setting out intermediate points by means of chords and versed sines, determine direction of tangents. Assuming the curve to be set out as shown in Fig. 1 with the points C, L, F, H, and A located, and that it is desired to find direction of tangent at A, the procedure is as follows :—

Take a length AJ^1 on chain equal to AJ, and a length HJ^1 equal to HJ on tape. Swing the chain and tape about A and H respectively until the ends intersect at J. Then J^1A produced will give the direction of required tangent with sufficient accuracy.

Similar methods may be used when it is desired to obtain direction of tangent at any intermediate point on curve or to extend curve beyond either A or C.

Easement Curves.

For curves under 400 ft. radius, a transition (or easement) curve between straight track and main radius curve is of great advantage. Without an easement curve it is almost impossible to avoid the impression of a "knuckle" or "kink" at the end of the curve, particularly in the case of a curve of small radius. In many instances the "knuckle" is left to the platelayer to get rid of by introducing a "fake" easement, put in to eye, but this method simply produces a curvature sharper at some point than that of the main curve, to compensate for the "fake" easement.

EASEMENTS FOR PLAIN CURVES.

Centre Radius of Main Curve.	Angle of Spiral S	A	Log A*	B	X^1	Y^1	X^2	Y^2	X^3	Y^3	X^4	Y^4
ft.		ft.		ft.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
30	18° 00′	30·85	1·48922	11·46	5 2¾	0 0¾	10 5½	0 4	15 7¾	1 0½	20 8¾	2 3¾
35	18° 00′	35·60	1·55148	9·92	5 2¾	0 0¾	10 5½	0 4	15 7¾	1 0½	20 8¾	2 3¾
40	18° 00′	41·52	1·61823	18·75	7 10	0 1	15 8¼	0 6¼	23 5¾	1 6¾	31 1½	3 5¾
45	18° 00′	46·27	1·66533	17·21	7 10	0 1	15 8¼	0 6¼	23 5¾	1 6¾	31 1½	3 5¾
50	18° 00′	51·03	1·70781	15·66	7 10	0 1	15 8¼	0 6¼	23 5¾	1 6¾	31 1½	3 5¾
60	15° 00′	61·18	1·78660	19·14	8 8¾	0 1	17 5¼	0 5¾	26 1½	1 5¼	34 8	3 2¾
75	15° 00′	75·67	1·87891	15·26	8 8¾	0 1	17 5¼	0 5¾	26 1½	1 5¼	34 8	3 2¾
100	12° 00′	100·92	2·00398	20·96	10 5¾	0 1	20 11¼	0 5½	31 4½	1 4½	41 9	3 1¼
125	9° 20′	125·48	2·09858	16·33	10 5¾	0 1	20 11¼	0 5½	31 4½	1 4½	36 7¼	2 1½
150	7° 00′	150·48	2·17748	18·33	10 5¾	0 0¾	20 11¼	0 4	31 4½	1 0½	36 7¼	1 7¼
175	5° 15′	175·30	2·24379	15·37	10 5¾	0 0¾	20 11¼	0 4	31 4½	1 0½	—	—
200	3° 45′	200·20	2·30146	13·09	10 5¾	0 0¾	20 11¼	0 4	26 2	0 7½	—	—
250	3° 30′	250·23	2·39833	16·14	10 5¾	0 0¾	20 11¼	0 2¾	31 4¾	0 8½	—	—
300	2° 30′	300·13	2·47731	13·09	10 5¾	0 0½	20 11¼	0 2¾	26 2	0 5	—	—
350	2° 30′	350·09	2·54417	10·91	10 5¾	0 0½	20 11¼	0 2¾	26 2	0 5	—	—
400	1° 40′	400·06	2·60212	9·31	10 5¾	0 0½	20 11¼	0 2¾	—	—	—	—

* Log. A is to nearest fifth place for A calculated to the fourth decimal of a foot.

EASEMENTS FOR SWITCH CURVES.

Centre Radius of Main Curve.	Centre Radius of Switch.	Angle of Spiral S	A	Log A	B^1	X^1	Y^1	X^2	Y^2	X^3	Y^3	Frog Angle C	Lead D
ft.	ft.		ft.		ft.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.		ft.
40	100	18° 00′	41·52	1·61823	12·79	15 0¾	1 1¾	21 4¾	2 4¾	25 1¾	3 5¾	20° 26′	29·18
45	100	18° 00′	46·27	1·66533	11·24	15 0¾	1 1¾	21 4¾	2 4¾	25 1¾	3 5¾	20° 26′	29·18
50	100	18° 00′	51·03	1·70781	9·70	15 0¾	1 1¾	21 4¾	2 4¾	25 1¾	3 5¾	20° 26′	29·18
60	100	15° 00′	61·18	1·78660	9·62	22 11½	2 8	25 1¾	3 2¾	—	—	17° 27′	30·69
60	150	15° 00′	61·18	1·78660	13·48	15 8	0 10	20 7	1 5½	29 0	3 2¾	18° 36′	34·27
75	100	13° 16′	75·67	1·87891	5·74	22 11½	2 8	—	—	—	—	17° 27′	30·69
75	150	11° 40′	75·67	1·87891	9·60	15 8	0 10	20 7	1 5½	24 9½	2 2½	18° 36′	34·27
100	200	12° 00′	100·92	2·00398	13·00	20 0½	1 0	28 7¾	2 1½	33 9½	3 1¼	15° 17′	40·67
125	200	9° 20′	125·48	2·09858	8·37	20 0½	1 0	24 2	1 5¾	28 7¾	2 1½	14° 48′	40·90
150	200	5° 45′	150·25	2·17681	5·01	20 0½	1 0	—	—	—	—	13° 54′	41·61
175	200	5° 45′	175·13	2·24336	2·50	20 0½	1 0	—	—	—	—	13° 03′	42·55

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Tables giving easements (or spirals) for all main radii ordinarily used for light railways have been prepared by the writer, but where full details are not available, the summary given below, correct to the nearest ¼ inch and fifth place logarithm, may be useful.

The tables were prepared owing to the considerable amount of time which the writer found was taken up by preliminary calculations in the office, when using the meagre data given in existing tables, before it was possible to commence laying out the work on the ground. With the tables here given, the calculations may be taken out on the site almost as quickly as for a curve without easements, and will be found to give thoroughly practical results.

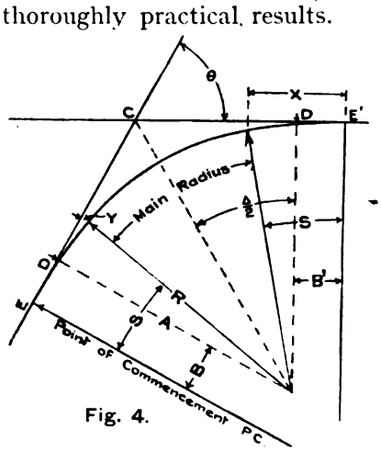

Fig. 4.

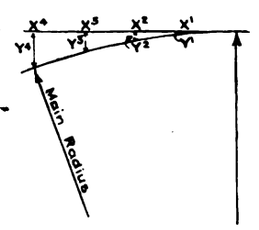

Fig. 5.

APPLICATION OF DATA.

To find commencement of curve E :—Add log. A for selected main radius to log. tan. of angle $\frac{\theta}{2}$. The result will give log. of CD in feet. Then CE = CD + B.

Example :—

Main radius = 50 ft. $\theta = 84° 30'$

$\frac{\theta}{2} = 42° 15'$ log. tan. = 9·95825

log. A = 1·70781 (from tables).

CD = 46·35 = 1·66606

DE = B = 15·66 ..... (from tables).

CE = 62·01 ft.

Intermediate co-ordinates necessary for setting out easements at each end of curve, as shown in Fig. 5, are given in preceding table for easements for plain curves, under columns X and Y.

The main radius portion of the curve (Fig. 4) may then be set out as already indicated (Fig. 1), using angle θ minus twice spiral angle, instead of original angle θ.

For radii over 400 ft., easements are unnecessary for light railways, unless the railways are designed to carry passenger or goods traffic drawn by heavy locomotives, in which case the easement data given above would obviously be unsuitable.

Standard radius switches or points may be used in conjunction with the easements for plain curves, and involve no alteration in alignment other than at point of commencement of curve. Tangent lengths are obtained as before, except that length B is shortened.

For example :—Supposing that in the case of the plain curve previously considered (see Fig. 4) it is desired to insert a switch at E^1, the switch tangent length CE^1 would be made up as follows :—

CD = 46·35 (as before).

$DE^1 = B^1 =$ 9·70 (from switch tables).

$CE^1 = 56·05$ ft.

The tangent length CE at plain end would remain 62·01 ft. as before. With the exception that table of easements for switch curves, instead of that for plain curves will be used, the procedure will be the same as in setting out easements and main radius for plain curves.

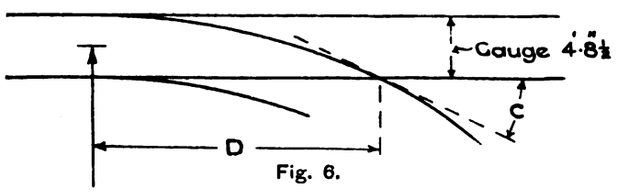

Fig. 6.

The data for plain curve easements are applicable to trackwork of all gauges, as the ordinates are unaffected by gauge, being marked off tangent to centre line of track.

In the case of the switch curve easements, the only columns which would vary with gauge other than standard are those for frog-angle C and lead D.

JUNCTION CALCULATIONS.

Where switch curves are designed without easements, the necessary calculations are simple.

Cos. angle C = $\frac{R^1}{R^0}$ (Fig. 7).

D = R° × Sin. C.

In the case of a 200 ft. centre radius switch on standard gauge track, the 200 ft. radius continuing unchanged through the frog :—

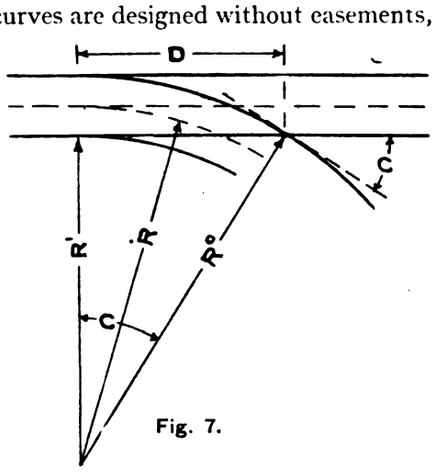

Fig. 7.

Cos. C = $\frac{197·646}{202·354}$ = ·97673 ∴ frog angle C = 12° 23′.

D = 202·354 × Sin. 12° 23′ = 202·354 × ·21445.

∴ D = 43·40 ft.

In the case of switches on easement curves, the calculations are rather more involved.

By way of example, the main radius of 60 ft. and 150 ft. centre radius switch may be considered.

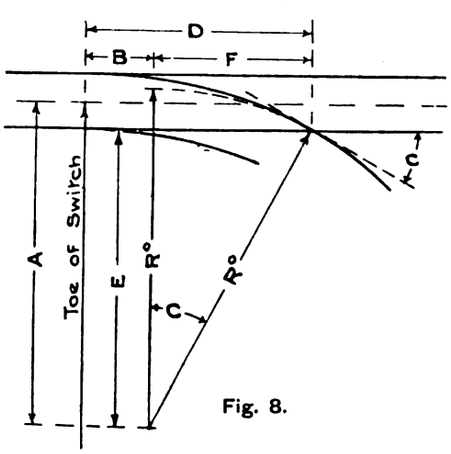

Fig. 8.

Centre radius at frog C (found from complete tables) is 75 ft. Therefore on standard gauge track R° = 77·354′. A, for main radius of 75 ft. and 150 ft. centre radius switch (see table of switch curve easements

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above) = 75·67 ft., ∴ E = 75·67 − ½ gauge = 73·316 ft., and Cos. C (frog angle) = $\frac{73{\cdot}316}{77{\cdot}354}$ = ·94780, and C = 18° 36′, F = R° × Sin. 18° 36′ = 77·354 × ·31896, and F = 24·67 ft., B^1 = 9·60 (see table above), and D = B^1 + F = 9·60 + 24·67, ∴ D = 34·27 ft.

General Arrangement of Curves.

Where reverse curves occur, great advantage will be derived by inserting a piece of straight track or tangent between the two curves. Where local conditions allow the super-elevation of outer rail, this straight track permits the gradual reversal of super-elevation, thus avoiding undue shock to vehicles passing round the curves. Even when the length of straight track has to be cut short, a length at least equal to longest wheel base, or, in the case of bogie trucks, distance between pivotal centres, should be allowed for. In such cases, however, it would not be possible to have super-elevation at commencement or end of curves.

With curves running in the same direction, a piece of straight track between curves is, on the other hand, a distinct disadvantage. Even a small ordinate set-off,

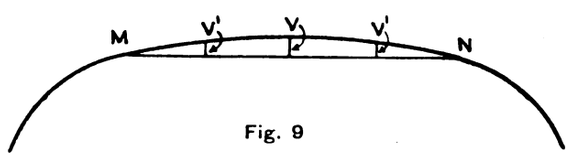

Fig. 9

as shown exaggerated at V in Fig. 9, will obviate the appearance of a "knuckle" at M and N which would otherwise follow. V^1 may be set-off ¾ V, as previously explained.

Single Line and Passing Places.

Where single line is adopted, passing places should be located so that an uninterrupted view of the track may be obtained between one passing place and the next in both directions. In this connection it should be noted that in addition to lateral obstructions, the brow of a hill may prevent through sighting if the passing places are badly arranged.

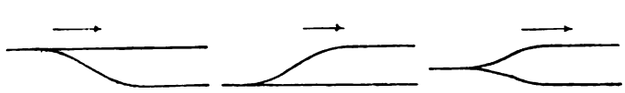

Fig. 10. Fig. 11. Fig. 12.

A turnout with a straight run-in should, if possible, be arranged for facing points, as shown in Fig. 10, in preference to one with curved facing points (Fig. 11), or an equilateral (Fig. 12), easier running conditions being thereby obtained.

Where traffic on the railway is only moderate, and the switches are operated by hand, a turnout such as that shown in Fig. 11 may be operated to advantage by keeping the points leading to straight track open in the ordinary way, the curved track only being used when traffic in the opposite direction is met at the passing place.

Standing room for the longest line of vehicles likely to be used on the system should be allowed in the passing place, adequate clearance being arranged for vehicles passing in the opposite direction.

Super-elevation of Outer Rail on Curves.

The amount of super-elevation required on a curve is that which produces in any vehicle passing round the curve a tendency to slide inwards, which balances the outward tendency due to centrifugal force $\frac{(WV^2)}{(GR)}$.

The two forces therefore balance when $\frac{WV^2}{GR} = \frac{WE}{T}$, where W = weight of vehicle, V and G = velocity and acceleration due to gravity, respectively, in feet per second, and R, T, and E = centre radius of curve, track gauge, and super-elevation, respectively, in feet.

W on each side of the equation cancels, and $V^2 = \frac{ERG}{T} = \frac{E \times R \times 32{\cdot}2}{4{\cdot}708}$ feet per second, ∴ V^2 = 3·1795 ER miles per hour, for standard gauge track.

Table of Safe Speeds.

In miles per hour, on curves 30 ft. to 2,000 ft. radius, and super-elevation ½ inch to 3 inches. Gauge 4 feet 8½ inches.

Centre Radius.	½″	¾″	1″	1½″	2″	3″
30	2·0	2·4	2·8	3·5	4·0	4·9
40	2·3	2·8	3·3	4·0	4·7	5·6
50	2·6	3·2	3·7	4·5	5·2	6·3
60	2·8	3·5	4·0	4·9	5·6	6·9
80	3·3	4·0	4·7	5·6	6·5	8·0
100	3·6	4·5	5·1	6·3	7·3	8·9
120	4·0	4·9	5·5	6·9	8·0	9·8
150	4·5	5·5	6·3	7·7	8·9	10·9
200	5·1	6·3	7·3	8·9	10·3	12·6
250	5·8	7·0	8·1	10·0	11·5	14·1
300	6·3	7·7	8·9	10·9	12·6	15·4
400	7·3	8·9	10·3	12·6	14·6	17·8
500	8·1	10·0	11·5	14·1	16·3	20·0
600	8·9	10·9	12·6	15·4	17·8	21·9
800	10·3	12·6	14·6	17·8	20·6	25·2
1,000	11·5	14·1	16·3	20·0	23·0	28·2
1,200	12·6	15·4	17·8	21·9	25·2	30·9
1,400	13·6	16·7	19·3	23·6	27·2	33·4
1,600	14·5	17·8	20·6	25·2	29·1	35·7
1,800	15·4	18·9	21·8	26·8	30·9	37·8
2,000	16·3	20·0	23·0	28·2	32·6	39·9

The table may easily be extended to cover any other radius or super-elevation. Velocity varies as the square root of super-elevation and radius. It therefore follows that the safe speed for any given super-elevation and radius will be the same for twice the given radius and half the given super-elevation. Again, as super-elevation varies directly as gauge, the safe speed for any given super-elevation will vary inversely as square root of gauge. For example, on 3 ft. 6 in. gauge track, the safe speed for any given super-elevation equals the table speed multiplied by $\sqrt{\frac{56{\cdot}5}{42}}$, or, approximately, one and one-sixth times the table speed for standard gauge track.

Where a curve is laid with sufficiently long easements, the rails may be laid level at commencement of easement, and super-elevation obtained by uniformly depressing inner rail and elevating outer rail until the required maximum super-elevation is obtained at commencement of main radius curve. If the easement is short or non-existent, the super-elevation must commence on straight track leading into curve.

Guard Rails and Gauge on Curves.

Where the track is laid with bull-headed or Vignoles rails, it is almost universally conceded that the gauge on curves must be widened. The amount of widening is, however, usually settled by rule-of-thumb.

In the case of grooved girder rails, most engineers and platelayers insist on tightening the gauge, but very few tight-gauge advocates are able to give any satisfactory argument in favour of their theory. Careful observation and experiment will demonstrate that the only argument in favour of tight-gauging on grooved rails is that the excessive wear due to grinding of wheels on curves is taken on head of outer rail in the

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early stages, rather than on lip or guard of inner rail. It cannot be denied, however, that tightening the gauge increases the grinding of wheels, and consequently the tractive effort required for passage of vehicles around the curve.

No hard and fast rule can be laid down for gauge on curves, as the best result varies in each case with radius of curve, wheel base—fixed or bogie trucks—diameter of wheel, contour of wheel flange, and width of groove.

Where the conditions justify the outlay, the best results are obtained by cutting, for curves of various radii, wooden templates representing gauge line of outer rail and lip of inner rail, or running side of guard rail. The templates should then be fitted to the wheels of an inverted truck, actual or model, so that the templates of outer rail and guard rail bear against wheel flanges. The width of inner rail groove, added to the distance between templates—measured radially—will then give desired gauge. Minimum width of inner rail groove is obtained by measuring distance between guard rail and outer face of wheel flange, and adding a clearance, as shown at A in Fig. 13. The worst conditions will naturally occur on the curve of smallest radius, as the angle between centre line of truck axle and a line radial to curve is then greatest, and the wheel flange consequently lies most across the groove.

Where more than one type of wheel base is used on the same track, the gauge which represents the best combination must be adopted.

Apart from the method of determining gauge of curves referred to above, fairly close results may be obtained by drawing a curved line representing gauge

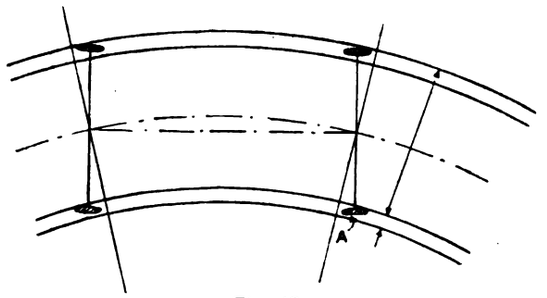

Fig. 13.

line of outer rail to half, or quarter full size, and fitting thereto a model cut from thin cardboard showing the projection of the portion of wheel flanges below head of rail at centres determined by wheel gauge and wheel base. The method of obtaining projection of portion of wheel flange below head of rail is shown in Fig. 14. The portion due to throat T may be neglected, and the projection assumed to be cigar-shaped as shown by dotted lines.

Overhang on Curves.

On straight double track, the centres of track are determined by the width of largest engine or truck, plus desired clearance for vehicles running on adjacent track.

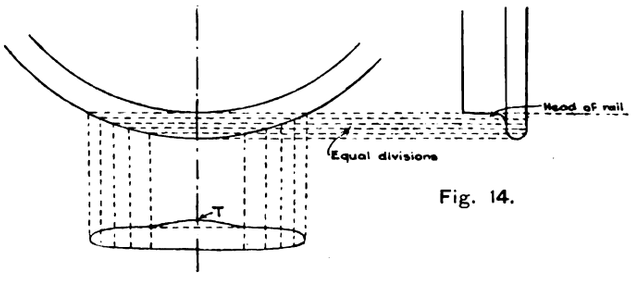

Fig. 14.

On curves, overhangs and versed sines must be taken into consideration.

$$\text{Versed sine } (V) = R - \sqrt{R^2 - B^2}$$
$$H = R - V$$
$$\text{and overhang } (O) = \sqrt{(H+W)^2 + L^2} - R.$$

Where R = centre radius of curve, L = ½ length of vehicle, W = ½ width of vehicle, and B = ½ wheel

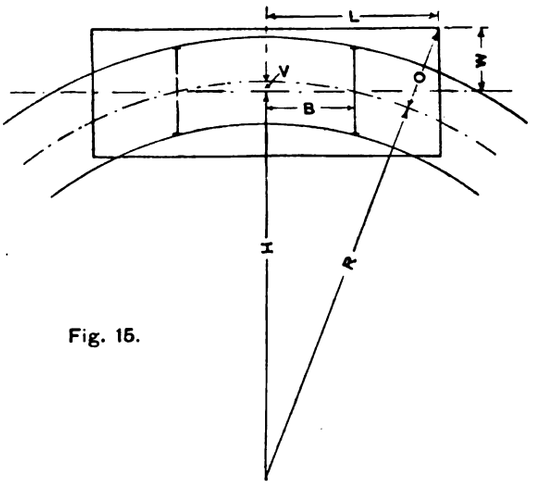

Fig. 15.

base; all units in feet. It should be noted that if the vehicle is unsymmetrical, L = dimension between centre of wheel base and end farthest from centre.

The worst clearance conditions occur when end of vehicle on inner track is opposite centre of vehicle on outer track.

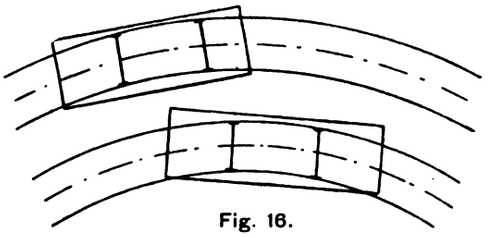

Fig. 16.

The minimum distance between centres required is given by the sum of overhang on inner track, versed sine, and half width of vehicle on outer track, and desired clearance between vehicles. For example, on a curve of 100 ft. centre-radius to both inner and outer tracks, with a truck 16 ft. long, 7 ft. wide, and 8 ft. wheel base, the overhang works out at 3·73 ft. and the versed sine at 0·08 ft.

Minimum track centres should therefore be :—

Overhang	..	3·73 ft.
Versed sine	..	0·08 ,,
½ width	..	3·50 ,,
Clearance (say)		2·00 ,,
		9·31 = (say) 9 ft. 4 in. centres.

The overhangs and versed sines may be obtained on all curves, except those of very small radius, by rather quicker methods. As R is always large compared with B, O, and L, the versed sine may be obtained with sufficient accuracy from the formula, $V = \frac{B^2}{2R}$. If the inner and outer tracks be laid concentrically, and R be taken to centre line of double track, the distance to be added to centres on straight track to obtain those for curved track may be obtained from the expression $\frac{L^2}{2R}$.

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By preparing a table of overhangs and versed sines for the largest engine or truck on all radii likely to be laid, repetition in calculation will be saved.

Staking Out Track Work.

For double track work, line and grade stakes are most useful when placed midway between tracks, and on all curves except those of very small radii, the inner and outer tracks should be concentric, to avoid separate staking of each curve. For single track, however, the stakes should first be placed on centre line, and afterwards transferred to the side by an off-set of four or five feet, determined by the width of vehicles used on construction work.

The grade should be marked on line stakes wherever possible, to avoid the confusion inevitable when two sets of stakes are used. On straight track the stakes should be placed at intervals of one hundred feet, but on curves the spacing of combined grade and line stakes will depend on the number of sub-divisions used in setting out the curves.

On curves, particularly in the case of single line track, it is advantageous to place a line of stakes at a uniform distance on each side of the track, so that a straight-edge with its ends resting on the stakes will give the cross-fall per foot necessary to obtain the desired super-elevation, the outer stake being placed above grade line by an amount equal to that by which the inner stake is dropped below grade line. If the gauge line of each rail be indicated on the lower side

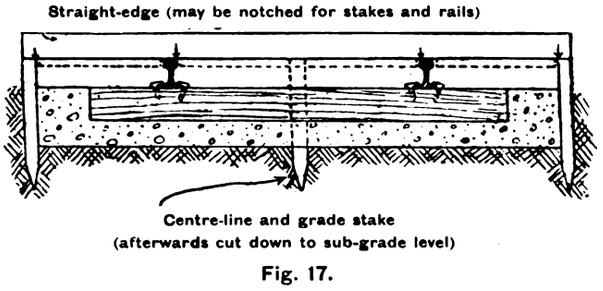

Fig. 17.

of the straight-edge, as shown in Fig. 17, the rails may then be quickly set up to line, grade, and super-elevation at points opposite the stakes. Between these points "kinks" in line are best detected when the superviser is standing upright. Bumps and hollows in grade, on the other hand, are best observed and corrected when the eye is placed level with top of rail.

Sub-grading and Final Grading.

After grade line has been transferred from centre to side of track, as mentioned above, the centre line stakes may be sawn down to sub-grade level, and intermediate sub-grade stakes boned in at the required intervals.

When sub-grade, or formation level, has been made up, sleepers, rails, and other material should be drawn by the construction trains to a point within a short distance of end of track, the trucks containing the material being pushed by hand for the remaining distance.

Rail chairs are seldom used for light railway track construction, dogs or spikes providing sufficient attachment between track rails and sleepers, particularly in the case of flanged rails. One rail should be approximately lined in and spiked in position, the second rail being afterwards set to gauge and spiked down. This roughed-in track may then be used for the purpose of hauling material forward.

If "kinks" be taken out of the track rails alongside the rail dump by means of a jim-crow, much time may be saved in platelaying, as the rails may be sprung into position with pinch-bars on the larger radius curves, apart from a certain amount of crowing at rail joints. When a reasonably good line has been obtained, gravel or other suitable ballast may be deposited on the track, and rails attached to sleepers—raised to grade by means of lifting jacks and the ballast solidly tamped under and around the sleepers. Inequalities in grade due to settlement under working conditions should be quickly remedied, to avoid undue strain on rolling stock.

In conclusion, it cannot be too strongly emphasised that, given equal conditions as regards gauging, etc., the better the track appears to the eye, i.e., the greater the absence of "kinks" in line and bumps in grade, the better will be the running conditions obtained. Track which is regarded as "good enough" may result in maintenance costs for track and rolling stock out of all proportion to the saving obtained by laying the track indifferently in the first place.

ELECTRIC TRAMWAYS IN THE SOUTH OF FRANCE.

A concession for some interesting electric lines has been granted to the department of Ariege, and was handed on by them to the Société du Gaz et de l'Electricité at Saint-Girons. It is intended for both passengers and goods, and includes the following lines:—Saint Girons to Castillon (13¼ kilometres), Castillon to Sentein (10½ kilometres), Oust to Aulus (15¾ kilometres). The two former serve the valley of the Lez, and are really a single line connecting with the ordinary railway line of Saint-Girons. The line from Oust to Aulus, which serves the valley of the Garbet, is at present isolated, but will be connected later to the railway from Saint-Girons to Oust, which is now being constructed. The scheme had been prepared by the Ponts et Chaussées in the expectation that it would be constructed by the department. A very detailed description by M. Bibes, the Government engineer, is to be found in the *Annales des Ponts et Chaussees*. This includes the construction of the line as well as a description of the rolling stock and the hydro-electric generators. According to the terms of the concession the maximum expenditure in the first instance was fixed as follows:—

	Fr.
Ligne de Saint-Girons to Castillon ...	967,000
Ligne de Castillon to Sentein	720,000
Ligne d'Oust to Aulus	1,025,000
Total	2,712,000

The company has carried out certain improvements in the system at its own risk without increasing the maximum price. These improvements include an increase in the power of the generators, particularly the one at Arrout, and in the capacity of the motors on the lines from Saint-Girons to Sentein; and also by setting up reinforced cement poles in place of the wooden supports originally intended for the overhead wires. As a result the expenses of the construction have been somewhat increased. They have reached about 3,050,000 francs, making an average per kilometre of 77,216 francs on the whole system. The daily current consumption registered at Arrout, which is supplied to the Saint-Girons and Sentein lines, covering a distance of 24 kilometres, has been found to be 6,371 units per month. During this time there were four trains a day in each direction over the line. Consequently 192 train kilometres were run daily—5,760 in the month. The current consumption per train kilometre is therefore given as 1·1 units.

Omnibuses and Road Upkeep.—At a meeting of the Executive Council of the County Councils Association on January 23 the Council again reported with regret that the promised Joint Select Committee proposed to be set up by the Government on the subject of the liability of motor omnibus companies to contribute to the cost of road maintenance has not yet been appointed, and that the report of the Departmental Committee on Locomotives and Heavy Motors (Damage to Roads) has not yet been issued. As the result of representations made last year by the Council to the Treasury Retrenchment Committee, a portion of the accumulated funds at the disposal of the Road Board has again been distributed to highway authorities.

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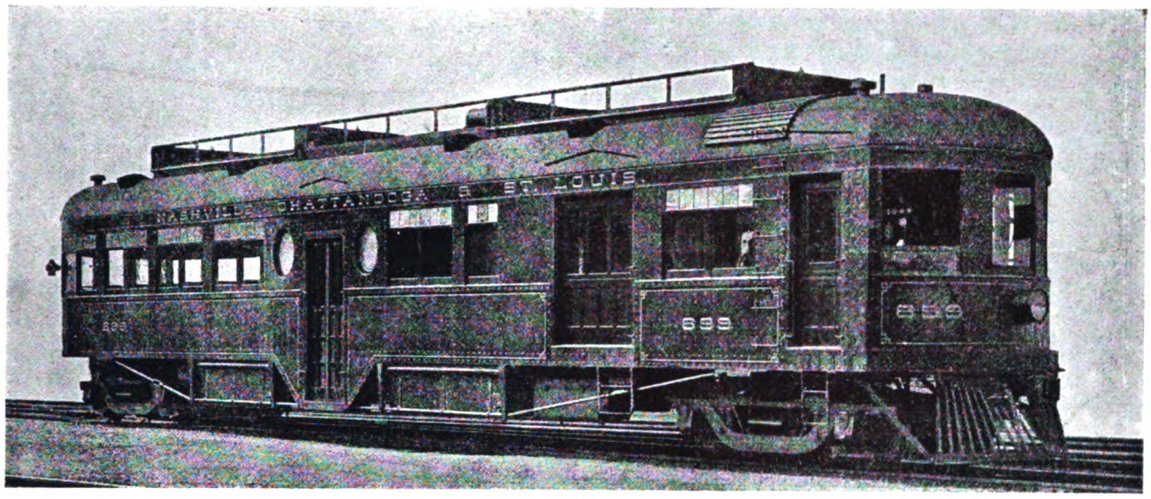
AN OIL-ELECTRIC CAR.

On some branch railway lines in this country good service is being done by automobile cars of the petrol or petrol-electric type where there is not sufficient traffic to allow of a steam locomotive and train being used economically. Similar cars are to a certain extent used in America. A description of a new and interesting car of the oil-electric type is given in the *Railway Electrical Engineer*, of Chicago, from which the following is abstracted:—



American Oil-Electric Railway Car.

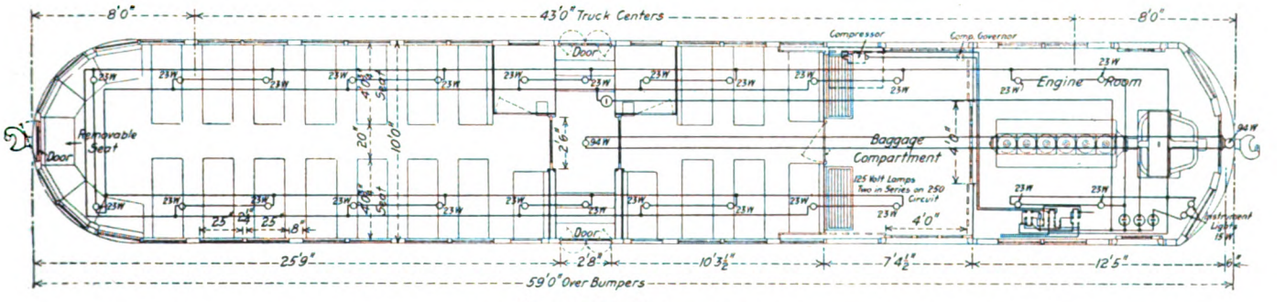
This car, which was designed by Mr. Ralph H. Beach, is worked by a 150-H.P. oil engine connected to an electric generator and a storage battery with a capacity of 438 ampere-hours at a five-hour rate. It was built to the order of the Nashville, Chattanooga and St. Louis Railway. By means of the generator and the storage battery a large reserve of power for peak loads is obtained, while it is claimed that the cost of working in the circumstances contemplated is only from one-third to one-fifth of the cost of steam working. The car runs 2½ miles per gallon of kerosene oil. Its rated speed is 45 miles per hour, and the acceleration is ·8 of a mile per hour per second.

A standard four-cycle, eight-cylinder 150-H.P. oil engine of the marine type is direct-connected to a 100-KW. differential compound-wound 250-volt d.c. generator running at a constant speed of 1,000 revolutions per minute. Either kerosene or fuel oil may be used, and no carburetter is necessary, the oil being fed to the cylinders in a gasified state through the action of a gas generator. This generator absorbs the waste head from the exhaust for the purpose of gasifying the oil. A mixture of one part of kerosene gas and six parts of air burns in the cylinders without smoke or any carbon deposit.

The storage battery, which is suspended below the car body, works in parallel with the electric generator. The latter is designed so that it automatically coincides as to voltage with the battery. When the generator is working up to its capacity, the battery supplies any excess of current which the load may require. This battery is capable of delivering 400 H.P. for five minutes, 210 H.P. for 15 minutes, 93 H.P. for an hour, and 30 H.P. for five hours.

With this arrangement the engine works at nearly full load constantly, and thus at its maximum efficiency. When the engine is yielding more power than the load requires, the surplus goes to charge the battery. The latter also starts the engine, lights the car, and drives the auxiliary apparatus. It likewise furnishes a source of energy in case of failure of the engine, being able to drive the car for about 35 miles.

The car, which is mostly of steel, weighs 113,000 lb., is 59 ft. long, and is divided into four compartments as follows:—Engine-room, 12 ft. 5 in. long; baggage room, 5 ft. 5 in.; smoking compartment, 10 ft.; main passenger compartment, 25 ft. 6 in. In addition to the side entrances between the main passenger and smoking compartments, there is an emergency exit at the end. The car, which seats 75 people, is mounted on two four-wheel trucks made by the Baldwin Locomotive Works, with 7 ft. 3 in. wheel bases and 33 in. steel wheels. The electric control used is the standard Westinghouse H.L. series-parallel type. Four 250-volt railway motors, each of 75 H.P., are mounted, one on each axle. Westinghouse air brakes and hand brakes are fitted.



Plan of Oil-Electric Car.

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The National Committee and Fares.

An interesting question as to the powers of the Tramways (Board of Trade) Committee was raised by a question in the House of Commons on January 31. The point which was brought forward was whether the Tramways (Board of Trade) Committee had decided to increase all tramway fares by at least 50 per cent., whether the Board of Trade had power to consent to any increase of statutory fares, and whether that question was within the purview of the Committee, seeing they were set up to deal with tramway material? The President of the Board of Trade replied that the Committee had recommended that, to enable tramway undertakings to meet the increased cost of labour and materials, powers to increase statutory fares should be obtained by the Board of Trade. To secure the materials required it might be desirable to increase fares. Neither the Committee nor the Board had the powers to do so, but the Board were considering the point, and he was of opinion that the Committee were within their reference in bringing the matter to the attention of the Board. Mr. Gilbert probably got the notion that the Tramways Committee could or would raise fares by 50 per cent. from the fact that railway fares have been raised in that proportion, but as far as we are aware no such increase in tramway fares has ever been contemplated. As to the powers of the Committee to consider the subject of fares, Sir Albert Stanley's remark is confirmed by the statement (quoted in our issue of January 17), which sets out the principal duties of the Committee. One of these is "To consider such applications for the revision of existing statutory tolls and charges on tramways and light railways as may be referred to them by the Board of Trade, and to make recommendations as to the action to be taken." We have repeatedly urged the necessity of increasing fares in order to meet the greatly increased cost of working because of war conditions. In many cases fares have already been increased without detriment to the public, and a healthier financial position for the undertakings has been brought about. Where fares are fixed by statute, the tramway authority working such lines cannot increase the statutory maxima without getting fresh powers from Parliament. This year, for example, the London United Tramways Company are seeking Parliamentary authority to abolish or to raise the statutory maxima. Whether the Board of Trade can under the Defence of the Realm Act take powers to dispense with existing fixed limits or not was not made clear. But whether it can, or whether it will have to seek Parliamentary authority, the fact remains that the question of obtaining and exercising such powers is being considered. To meet conditions which are continually becoming more stringent, liberty must be given to tramway authorities to make even considerable increases. It will remain for them to determine to what extent it is necessary that the liberty should be used.

Terminal Congestion.

Two causes have aggravated congestion at termini since the outbreak of the war. The ever-increasing labour shortage has reduced the number of cars in service, and munition work has added to the multitude of persons travelling. In several towns the queue system has had to be introduced in order to prevent dangerous crowding when boarding the cars. This is the only

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effective method of obviating a danger that ought not to be permitted to continue, especially when the terminus is situated in a busy thoroughfare. In Bradford there is a completeness in the remedial measures that is worthy of imitation elsewhere. In that city the innovation was secured by the Watch Committee, to whom the police are responsible for the maintenance of order. They obtained from the Board of Trade authority to require passengers to form into line not only at termini but at any stop where six persons are waiting. If there is one community where a regulation is required both for tramway cars and omnibuses it is the Metropolis, and it is safe to affirm that if the public passenger transit of London were controlled by a Traffic Board, which has been called for so insistently, the reform would have been effected long ago. It is impossible not to suspect that the Metropolitan Police are mainly responsible for the disinclination of successive Governments to comply with the demand. Hitherto scenes of disorder have characterised busy points, and during the past six months the chief of the police has been the recipient of resolutions urging the formation of queues from the Safety First Council and from the Borough Councils. The need for reform has become increasingly evident at the Victoria terminus, where 78 cars are dealt with per hour during the evening rush period. Having opposed a proposal of the Council to run a loop line past the frontage of Victoria railway station, the police have made themselves doubly responsible for the continuance of the rush for the cars. Apparently recognising this view of the matter, they have recently placed two or three constables there to give the minimum assistance to the tramway staff in the working of a new method of loading and unloading. Following the installation of a second crossover, which enables six instead of three cars to be dealt with, the front platform of incoming cars is reserved as an exit. The police prevent persons entering at this end, directing them to the platform on the other side of the car. By this method a car is emptied more expeditiously, but the loading rush is concentrated at one entrance. With police supervision it would not be difficult to secure the formation of queues, but as six services are dealt with it is not possible to line the passengers up in readiness for a car's arrival. This is due to the existence of only a single track on the terminus side of the old crossover. With a double track there seems to be no reason why a system of a fixed loading place should not be adopted for each route. The use of the front end as an exit is a recognition of an innovation for which we have often pleaded. If every new car had its staircases arranged to permit the front end to be so utilised, journey times would be shortened and road obstruction lessened at stopping-places. At termini the facility of entering and leaving a car on either the near or the off side would enable simultaneous loading to be effected on both lines, while cars are standing side by side, but with the present platforms this facility is only possible when cars are placed end to end.

On Going Home Early.

The London County Council decided some time ago to advertise their tramway system and the facilities it offers, and in consequence displayed advertisements appear periodically in the London Press. Among the objects of these announcements is the making of requests or the giving of advice to the public in regard to various matters. One of the most useful of these pieces of advice is that which appeals to ladies to do their shopping in the middle of the day or early afternoon, so that their use of the tramway cars will be in the slack hours. Thus more room will be left for the workers returning home in the evenings. Owing to the depletion of the tramway staff, the task of grappling with the rush hours' traffic is very serious, and people are often much delayed. The evil is also aggravated by the great numbers of munition workers who, whatever else happens, must be carried. The same appeal might be made in many other towns in this country where for the same reasons the busy hours are periods of acute congestion. In these other towns, however, there is, in addition, a midday or early afternoon busy period, as so many people go home for dinner. In London distances are generally too great to allow of that. Shoppers and others who can with equal convenience travel at any time during the day thus should exercise special care in those places so as to avoid also travelling at the dinner hour. The

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war time accentuation of the rush hours is now making itself felt in the United States, and the street railway companies are trying to induce those who can travel at other times of the day to avoid the busy times. As a New York contemporary puts it, electric railway patrons who can be induced during the next few months to return homeward before the afternoon rush gets well under way will perform a real patriotic service in so doing. The spreading out of the load means among other things greater comfort for the public, greater punctuality of the cars, less strain on the conductors, better collection of fares, and reduced fuel consumption at the power-station. It is indeed the peak of the load which plays the mischief with economical operation on many systems. These things should be rubbed into the public mind both here and in America. It would be well if our principal tramway undertakings were to follow the example of London and advertise. The campaign should be directed to objects of immediate importance, and the subject discussed here is at present emphatically one of them. It is astonishing to find how little the public appreciate what to the expert is an obvious fact. If that fact, however, is brought before them, and if the announcement is reiterated, the response which is given to a reasonable request is wonderful.

Tramway Help for Food Distribution.

While at the rush hours many tramway systems are already overburdened with the magnitude of the traffic that has now to be handled there are periods when the cars run almost empty. At these times there is undoubtedly an opportunity for undertaking work in connection with the efforts that are now being made to economise road transport. Experiments might be undertaken in this connection in two directions. One is the provision of baskets to be hung on the rear dash; another is the haulage of other vehicles as trailers. To do this it would be necessary to ignore the Board of Trade restriction that led to the use at Burnley of a trailer designed to be pushed in front instead of being drawn. Even with gas available as fuel for motor vehicles it is conceivable that a prolongation of the war may yet witness an extensive use of trailers not constructed to run on the rails. It is satisfactory to find that a Corporation tramway chairman has conceived a form of transit that is urgently needed. The step is required in order to render the scheme of public kitchens really effective in securing the economy of consumption which is necessary if the country is to escape something worse than food shortage. On January 28 Alderman C. F. Spencer, chairman of Halifax Tramways Committee, entered upon his duties as Director of the Central Kitchen Division of the Ministry of Food, and on the same day the Mayor of Salford was asked by Lord Rhondda for the transfer of the services of Mr. G. W. Holford, the borough tramways manager, in order that he might act as assistant to Alderman Spencer. Alderman Spencer, as chairman of the Leeds Fireclay Company, which has the bulk of its products hauled by Leeds Tramways Department, has already tested the value of tramways for goods carrying. At Halifax he was recently instrumental in securing some disused railless trolley cars from Dundee to be converted for future goods transit. Mr. Holford, too, has made a special study of goods haulage, and was joint author of a paper on that subject presented at the Municipal Tramway Conference of 1916. As part of his plans Alderman Spencer is credited with the intention of providing travelling kitchens on tramways to ensure speedy distribution. It would be possible to utilise for the purpose the covered trucks possessed by most tramway undertakings, but the procedure would not be economical. To achieve economy the cookery must be done at the central kitchen, and it will doubtless be found, with a few exceptions, that the travelling kitchen will be simply a means of keeping the food hot. In using motor cars for that purpose Hammersmith has made its kitchen the most successful in the Metropolis, and that borough has recently agreed to supply food to depots established by the Chiswick and Marylebone Councils until such time as those districts have opened central kitchens. Much useful information upon the transit aspect of the question has been obtained by the Bradford Tramways Department, which has for some years transported to the schools the cooked food provided for poor children by the Education Committee. Managers have no need to await the initiative of Alderman Spencer;

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they can at once begin to work out the details of a local scheme for assisting the new project, and thus be ready to co-operate with the director as soon as his plans are sufficiently advanced.

Light Railway and Tramway Curves.

Since the outbreak of the war light railways have acquired steadily increasing importance for the transportation of materials of various kinds, both on War Department grounds in this country and behind the various battle lines. Moreover, the transportation of agricultural produce to the large distributing centres will undoubtedly receive a great impetus after the termination of hostilities. Motor traction will prove inadequate to the demand until a great scheme of construction of national highways has been carried into effect Light railways, on the other hand, provide a cheap and rapidly constructed means of transport which will not be lost sight of by the Ministry of Reconstruction. There is a strange dearth of technical literature on the subject of light railways, and the lengthy experience on actual work in the field, embodied by Mr. J. Owen in an article in this issue, will therefore be doubly welcomed by our readers, many of whom are engaged on work of this nature. For the benefit of those engaged on the construction and maintenance of tramways, various items of interest in the article may be pointed out. Few tramway curves are now constructed without easements, or spirals, the extra trouble involved in setting out spiral curves being more than compensated for by the smoother running conditions obtained thereby. The system of spiral curves generally used in this country is that published by the Lorain Steel Company. The spirals are made up of small arcs of curves having radii in odd decimals of a foot, and are tabulated for offsets to inner and outer rail where stakes, obviously, cannot be placed on the work. Having found the Lorain, Wharton and Pennsylvania spirals all more or less inconvenient and involving tedious preliminary office work, the writer of the article calculated a set of spirals for staking out centre line of curves, by means of which tangent lengths and other data may be calculated on the job in as many seconds as other tables require minutes. A summary of these tables will be found in the article, a five-place pocket edition of mathematical tables only being required in addition to calculate curve data with ease and expedition. Other points of interest to tramway and light railway engineers alike will be found under the headings of "Gauge on Curves," "Super-elevation," and "Overhang of Vehicles on Curves." Special attention is drawn to that portion of the article dealing with the calculation of curve data without the aid of mathematical tables and angular measuring instruments.

SIR JOHN WOLFE WOLFE-BARRY, K.C.B.

The celebrated Past President of the Institution of Civil Engineers passed away in the evening of January 22 last, after a month's illness, in his 82nd year. In May last he delivered the James Forrest lecture at the Institution at the last request of the founder of the series, who had died not long before while Honorary Secretary. Sir John, on that occasion, showed no signs of failing health and strength while he discoursed on a subject he had made his own for many years past. In the lecture he described the work done by the Engineering Standards Committe, of which he was the founder and continued to be the chairman. The standards established have led to enormous savings, and tramways like other things have benefited from the work of this organisation. For example, the British standard sections of tramway rails have superseded a host of miscellaneous patterns.

Another subject which Sir John had at heart was the education of engineers. He was able to assert, very much owing to his own individual labours, that the bringing up of "officers" in the engineering profession had been established on a firm foundation, and at one of his later appearances on the Council he urged the necessity of tackling and mastering the problem of the upbringing of the "rank and file." The officers' education may now be said to be provided for, and, indeed, it does not present so many difficulties as that of the lower grades. This question will never be satisfactorily settled, or even discussed, unless the fathers of the rising generation, the foremen, the shop stewards, and others be invited to sit at the round table at which it has been suggested that engineers, manufacturers, and scientific theorists should gather in consultation.

Sir John Wolfe-Barry's connection with London traffic began early. He joined the Institution of Civil Engineers early in 1868, and that same year he read a paper on "The City Terminus Extension of the Charing Cross Railway." Between 1877 and 1880 he was engaged on Earl's Court station and the extension of the District Railway to Ealing and Fulham; from 1882 to 1885 on the city lines and extensions or on the completion of the inner circle for the Metropolitan and the District Railways; 1883 to 1887 on the bridge and station at Blackfriars; 1882 to 1885 on the Mansion House and Whitechapel stations and the South Kensington subway; and from 1886 to 1894 he designed and erected the Tower Bridge in London. Sir John acted at times as consulting engineer to the underground railway in Glasgow; to most of the railways having termini in London; to all the London underground railways; to the Corporation of London; and to the Bridge House Estates Committee—all more or less connected with urban traffic.

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In 1901–2 he was on the Commission of Inquiry into vibration on tube railways. He had devoted much attention for years to the question of London traffic, as witnessed by his addresses to the Society of Arts in 1898 and 1899, in which he displayed a largeness of view commensurate with the importance of the subject. It was natural that he should preside on the Advisory Board of the Royal Commission on London traffic and the various methods of transportation. The Commission was appointed in 1903 and the Board submitted their report two years later, this being signed by J. Wolfe-Barry, Benjamin Baker, and Wm. Barclay Parsons. The question of tramways was thoroughly investigated, and the conclusions were fully reported in the pages of this journal at the time. The general conclusions may, however, be repeated at this juncture. Tramways should be extended to points of destination and dead-end termini should be abolished by the extension of lines south of the Thames across the river; the north and south and east and west lines should be joined up. The lines should pass all the great railway and underground stations. "Junctions should, in many cases, be avoided between distinct routes which cross each other, and through running carried on between north and south and east and west." Had but a tithe of the recommendations made from time to time by Sir John Wolfe-Barry been carried out, the present chaos would have been avoided in a great measure, if not altogether.

THE NATIONAL TRAMWAY COMMITTEE.

CO-OPERATION OF TRAMWAY UNDERTAKINGS.

The Tramways (Board of Trade) Committee issued a circular letter on January 29 to the tramway undertakings of the United Kingdom, setting forth the constitution and purpose of the committee and asking for co-operation in forming area sub-committees. The letter gave the names of the members of the committee, the terms of reference, and the duties as laid down by the Board of Trade, particulars that were included in our issue of January 17. The circular, which was signed by the secretary, Mr. J. N. Wilson, then continued as follows:—

"It will be apparent that the work involved is of great magnitude and of national importance, and the committee have been giving very serious consideration to the machinery which they will set up for the purpose of carrying out the duties imposed upon them by the terms of their reference.

"For this purpose it has resolved to divide the country into nine areas, which will be placed in four groups under sub-committees of the committee, to be termed 'Area Sub-Committees.'

"The nine areas will be as follows:—

1. Metropolitan and East Coast.
2. South-east and South to Bournemouth.
3. South-west and South, excluding Bournemouth.
4. Midlands.
5. Lancashire, Cheshire and Wales (North).
6. Yorkshire and Lincolnshire.
7. Northern.
8. Scotland.
9. Wales (South).

"To assist the area sub-committees in carrying out their investigations it has been decided to invite representatives of the tramway undertakings in each area to act in a consultative capacity as local advisory committees. As soon as possible meetings will be arranged in convenient centres in each area to be attended by the members of the area sub-committee concerned, when the scheme will be further explained.

"I am therefore to inquire whether my committee may rely on the co-operation of your tramways committee in giving effect to these proposals. Your friendly assistance will be much valued by my committee, who will doubtless be confronted by many difficult problems in the discharge of the duties with which they have been entrusted."

The Board of Trade Journal states that there has been an immediate and favourable response from the tramway undertakings of the country. Already a large number of undertakings in important centres have signified their willingness to co-operate in forming the area sub-committees, and in many other cases, although formal meetings of the committees or boards of directors have not yet been held, through lack of time, the chief executive officers have promised their active assistance.

SECRETARY AND OFFICES.

Mr. J. N. Wilson, secretary and treasurer of Glasgow Corporation Tramways Department, has been appointed secretary to the committee. The committee have taken temporary offices at 82, Victoria Street, S.W.1, pending their establishment in permanent quarters at 8, Buckingham Gate, S.W.1.

DEMANDS OF THE NATIONAL TRANSPORT WORKERS' FEDERATION.

Following the conference which was held in London on the invitation of Sir George Askwith on January 29, when there were present representatives of a large number of municipal tramway committees and tramway companies, and of the National Transport Workers' Federation, Mr. Robert Williams, secretary of the Federation, has sent a letter to Mr. G. H. Roberts, M.P., Minister of Labour. At the conference the representatives of the Workers' Federation asked that the award of January 8 of an increase of £1 a week already granted to workers in commercial road transport might be extended to those engaged in passenger transport by road. The conference met without any power to deal with the demands of the men's Federation, and no definite conclusion was reached. Though the conference specially related to tramway and omnibus assistants, much larger issues were involved. As a matter of fact, some of the undertakings already pay their employees more than the terms now asked, and others are considering applications which have been made to them individually. It was the desire, however, of the Federation that the questions at issue should be decided by the employers as a whole, and considerable disappointment was expressed by the Federation's representatives at the conclusion of the conference.

Mr. Williams's letter to the Minister of Labour complains of the attitude of the employers, who passed a resolution informing Sir G. Askwith that as the conditions appertaining to the passenger-carrying undertakings are not comparable with the majority of the interests represented in the Federation, they could not enter into negotiations on the lines suggested by the Federation's representatives, but were willing and anxious to enter into negotiations with the trade unions who directly represented their employees, with a view to setting up joint industrial councils on the lines of the Whitley report. "The Federation," Mr. Williams continues, "is still anxious to re-open negotiations upon a national basis. Granting the existence of what is called 'the vicious circle' of increased prices, necessitating increased wages, and bringing about further increases in prices, you will readily admit that those who are left outside the ambit of the 'vicious circle' are in a far worse position than those who keep themselves within the circle. For these reasons we are demanding conditions for tramway and omnibus workers comparable with those obtained by the other sections of workers equally well organised and equally clamorous in demands. I would like to have your observations as to whether your department is in a position, either alone or with the War Cabinet, to provide for a re-opening of the negotiations."

STATUTORY TRAMWAY FARES.

Mr. Gilbert asked the President of the Board of Trade in the House of Commons, on January 31, if any decision has been come to by the Tramway Committee set up by his Department to increase all tramway fares by at least 50 per cent.; and if he can state whether he has power to consent to any increase of statutory tramway fares under the Defence of the Realm Act?

Sir A. Stanley: The Tramways Committee have recommended that, to enable tramway undertakings to meet the increased cost of labour and materials, powers to increase statutory maximum tramway fares should be obtained by the Board of Trade. At present the Board of Trade have no general powers of this kind, and the question whether such powers should be sought is being considered.

Mr. Gilbert: Is it a fact that this Committee was really set up to deal with tramway material, and is the question of the increase of fares within their purview?

Sir A. Stanley: I can only point out that in order to secure the material it may be desirable that tramway fares should be increased. The Committee have no power to authorise this; that would be for the consideration of the Board of Trade alone.

Mr. Lough: Does not my right hon. friend think that the Committee is travelling outside—and much outside—the terms of its reference by going into such issues?

Sir A. Stanley: They are, I think, within their reference in bringing this matter to the attention of the Board of Trade. It does not bind the Board of Trade.

Mr. Gilbert: Will the right hon. gentleman say in what way this matter can be brought up again; will he bring up a recommendation to the House to increase the fares?

Sir A. Stanley: This matter has just been brought to my attention. I had not heard of it previous to the question.

Mr. Rowlands: Will the right hon. gentleman give the House an opportunity of discussing the matter before action is taken?

No reply was given.

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MUNITIONS BONUS.

The following decision by Sir George Askwith was given on January 7 :—

Under power conferred upon me by the War Cabinet, I decide that all plain time working employees in generating stations, sub-stations, and on mains directly concerned in the generation and distribution of electrical energy, including the technical staff, and in the case of electrical contractors employees engaged on munitions work, including the technical staff, shall receive a bonus as follows :—

(1) To workers who have not received more than 20s. war advance the equivalent of 12½ per cent. on earnings. Any advance given by a pending decision of the Committee on Production or any advances given by agreement or otherwise equivalent to the advance of 5s. granted by the Committee on Production to certain trades from the first full pay day in Decenber to be added as a war advance to the advances already given and to count as part of the earnings from the date of such advances.

(2) To workers who have received over 20s. war advance, sufficient to produce an equivalent to the 20s. plus 12½ per cent on earnings, that is to say, any excess in war advance over 20s. shall merge in the 12½ per cent. on earnings.

(3) Workmen who have received the equivalent of 20s. war advance plus 12½ per cent. on earnings or more are not affected by this settlement. In calculating whether 20s. has been received it shall be taken as 20s. for the normal week as recognised in the district.

(4) Basis rates of wages and conditions of labour shall remain as at present until the withdrawal of war wages and war bonuses. This clause is without prejudice to pending negotiations (if any) which may have commenced.

(5) This decision shall take effect as from the beginning of the first full pay next after the 13th of October, 1917.

G. R. Askwith, Chief Industrial Commissioner.

The following official statement was issued on January 10 :—

The Cabinet have decided that the settlement of any claim arising from the recent Orders granting an advance of 12½ per cent. to plain time workers in the shipbuilding and munitions trades shall be referred to the Ministry of Labour, in place of the War Cabinet Labour Committee.

Following this decision the Minister of Labour received the following resolution, in which the Minister of Munitions concurs :—

> That this Committee of Trade Union representatives in the shipbuilding and engineering trades advising the Ministry of Munitions request the Minister to represent to the Minister of Labour, who, they understand, is now charged with the settlement of the 12½ per cent. question, that the following should be the terms of settlement :—
>
> (1) That the 12½ per cent. shall be extended to cover time workers who have not yet received the advance in the shipbuilding and munition trades.
>
> (2) That so far as the pieceworkers in these trades are concerned no 12½ per cent. shall be given, but that low piece prices shall be revised, and that employers shall be given to understand that this is the decision of the Government.

The Minister of Labour proposes to deal with applications on the lines of this resolution and under the procedure of the Munitions of War Act, 1915, Section I. and Schedule I.

The applications which have already been received by Government Departments are so numerous that it is almost impossible for settlement to be arrived at within the 21 days from the date of reference to the Ministry of Labour, but this need not cause any uneasiness in the minds of the officials of the trade unions or the workmen concerned. The arbitration tribunals have power to ante-date awards for such periods as seems reasonable.

This statement is made with the concurrence of the representatives of the workmen in the trade unions chiefly concerned, and the Minister sincerely hopes that a willing response will be made.

Extension of the Bonus Plan.

The Ministry of Munitions announce arrangements for the application of the 12½ per cent. bonus to men employed on munition work in certain trades. The arrangements, which are to be worked out in detail for each trade by conferences between the employers and the trade unions concerned will apply to adult male plain time workers, and will follow in the main the lines of the general scale of bonus for the iron and steel trades agreed to last week and announced on January 5. Under that agreement those who have received war advances of not more than 20s. a week will get the 12½ per cent. bonus, and those who have received more than 20s. will get sufficient to bring them up to the same level.

The arrangements will not apply to men paid by results. Where the normal earnings of such men correspond so closely to those of timeworkers in receipt of the bonus that the inducement to effort is not maintained, adjustments will be made. The arrangement will operate as from the beginning of the first full pay next after October 13. Any agreements will be subject to confirmation by the Ministry of Munitions, to whom questions of interpretation are to be referred.

The following official notice was issued on January 21 :—The members of the Committee on Production have been appointed by the Minister of Munitions as a Special Arbitration Tribunal (Section 1 (2) Munitions of War Act, 1917) to deal with differences arising on the 12½ per cent. Order referred to the Tribunal for decision by the Ministry of Munitions.

MEDICAL EXAMINATION OF TRAMCAR DRIVERS.

The following letter from the Board of Trade, dated January 11, was considered by the Council of the Tramways and Light Railways Association at their meeting on January 18, when it was decided to publish the letter, together with a recommendation from the Council to the various undertakings, that the wishes of the Board of Trade with regard to this matter be carried out :—

Board of Trade (Railway Department),
7, Whitehall Gardens, London, S.W.1,
January 11, 1918.

Sir,

I am directed by the Board of Trade to state that in connection with the circumstances of the serious accident which occurred on the Dover Corporation Tramways on August 19 last, in which case the motorman concerned had been discharged from the Army owing to nervous breakdown as unfit for military duties, it has been suggested to the Board that medical examination of men offering themselves as tramcar drivers is desirable when there is a possibility that they have been suffering from shell shock or similar nervous complaints.

The Board would be glad to learn whether your association can take any action in the direction suggested.

I am, sir, your obedient servant,
Ernest J. Moggridge.

The Secretary, Tramways and Light Railways Association,
Sanctuary House, 33, Tothill Street, S.W.1.

LONDON UNDERGROUND RAILWAYS AND L.G.O.C. GROUP—OPERATING DEPARTMENT EFFICIENCY MEETINGS.

The fourth meeting of the third series of operating department efficiency meetings was held on January 22 at the L.G.O.C. Training School, Milman's Street, Chelsea, Mr. H. E. Blain, operating manager, presiding over an audience of about 200 of the control grades.

A paper, "Office Organisation and Office Appliances," was read by Mr. E. S. Walton, indoor assistant to the general superintendent, London General Omnibus Company, who, after condemning the attitude which frequently regards an office staff as non-productive and non-remunerative, because if properly organised, it could be made as productive as a factory, proceeded to discuss the proper sub-division of an office into sections, which should be so organised as to work practically simultaneously, with the result that output was both quick and accurate. He advocated that all clerical work should be passed from the head to the clerical staff through the single medium of a chief clerk, who would then be enabled properly to organise the work, and the duties and qualifications of chief clerks and sectional head clerks were described.

The usefulness of tactful encouragement was undoubted, and frequently the method of dealing with mistakes had a bad rather than a good influence. Differences of temperament must be understood, and the influence of personality was a great stimulus to loyalty and efficiency. The writer, whilst recognising that the grading of a clerical staff with automatic increases of pay ensured a definite prospect, was of opinion that the system had its drawbacks in failing to stimulate and recognise work which was above the average, and he advocated a combination of graded pay with special advances.

The more important part of the paper dealt with office appliances, a number of which were described, and were on exhibition subsequent to the discussion for the inspection of the audience. Amongst the appliances discussed were :—Recording machines, including the Elliott-Fisher invoicing adding machine, the international cash register, and the Rochester time recorder ; copying machines, including the Roneo duplicator, the use of a printing plant, and the "Photostat" ; sorting machines for cards and cash, including the "Hollerith" ; calculating machines, including the "Comptometer," "Triumphater," "Bruneviga," etc. ; and the Protectograph cheque writer. The respective advantages of the dictaphone and the personal stenographer were described, and every-day appliances such as pencil sharpeners, letter openers, perpetual numbering machines, pin appliances, paper binders, typewriters, envelope dampers, the "Multipost," various methods of filing, the important questions of office ventilation and daylight, internal and external telephone systems, bells, and the general lay-out of an office.

An interesting discussion followed, which was opened by Mr. C. S. Leuch, accountant to the companies, and Mr. G. P. Barnett, assistantto the operating manager, amongst those taking part being two visitors, Messrs. W. Holt, traffic superintendent, Metropolitan Railway, and J. Pepper, outdoor goods manager, Midland Railway, who expressed their pleasure at the opportunity of hearing the discussion and paid a tribute to the undoubted educative influence of such meetings.

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FINANCIAL REPORTS AND MEETINGS.

Lima Light, Power, and Tramway Company have declared a dividend of 1½ per cent.

San Paulo Tramways, Light and Power Company.—A dividend has been declared at the rate of 2½ per cent. on the issued common stock.

Isle of Thanet Electric Tramways and Lighting Company, Limited.—The accounts for the year ended September 30, 1917, show a loss of £4,731, which reduces the credit balance to be carried forward to £3,825.

Edison Swan Electric Company, Limited.—At an extraordinary meeting held recently the resolution authorising the reduction of capital in the terms of the scheme of arrangement recently proposed, was duly confirmed.

Scarborough South Cliff Tramway.—The accounts for the past year show £428 for distribution. It is proposed to add £23 to the debenture sinking fund, and to pay a dividend of 3 per cent. (free of income-tax), carrying forward £135.

General Electric Company.—In addition to the half-yearly dividend of 6s. per share on the preference shares, less income-tax at 5s. per share, paid on December 31, an additional distribution has been made of 3s. per share, free of income-tax. This represents the income-tax deducted in 1916 and June, 1917.

Blackpool, St. Annes and Lytham Tramways Company, Limited.—The past year's net receipts were £44,412, and the expenditure £33,134, leaving £11,287. After paying debenture interest, £7,500, and carrying £2,000 to the sinking fund, there was a surplus of £1,787, which has been applied in reduction of the previous adverse balance, which now amounts to £40,431.

Liverpool Overhead Railway Company.—A final dividend has been paid for the half-year ended December 31 last at the rate of 5 per cent. per annum (less income-tax) on the preference shares, and at the rate of 4 per cent. per annum (less income-tax) on the ordinary shares. The dividend for the year is thus made up to 5 per cent. on the preference and 3¾ per cent. on the ordinary shares.

Siemens Brothers and Company, Limited.—Sir Albert Stanley, in reply to a question in the House of Commons, has stated that the shares in Siemens Brothers and Company, Limited, vested in the Public Trustee, have been sold to subjects of British birth. No company has been formed for the purpose of purchasing the shares. One of the conditions of the sale is that the articles of association shall be altered so as to ensure that the control of the company will in future be vested in British subjects, and the Public Trustee has received assurance as to the continuance of the business.

Yorkshire (West Riding) Tramways Company.—Presiding at the annual meeting in London of this company, Sir H. Leon said that the year under review had been one of unprecedented difficulty, but it had not been unsuccessful despite all they had had to contend with. It was impossible for him to exaggerate the labour difficulty. A large percentage of their men had joined the army, and the company were now employing women. During the year they had carried over 14,863,000 passengers, an increase of nearly 2,000,000, most of whom were miners and munition workers. The year, like its predecessors, had been marked by amicable relations between the company and the various district authorities through which their lines passed.

Brisbane Electric Tramways Investment Company.—The Board report that two Bills have been introduced by the Queensland Government, which, if passed, would injure the company. In 1910 Sir Robert Finlay, K.C. (the present Lord Chancellor), Mr. Rowlatt (now Mr. Justice Rowlatt), and the late Sir Edward Carlile, K.C., of Melbourne, were consulted, and they advised that the basis on which the purchase price must be ascertained is the commercial value of the undertaking as a going concern. The proposed legislation will seriously reduce the revenue of the company, and as a consequence its commercial value as a going concern. It is proposed to accomplish this mainly by reducing the fares, which are already lower than those entitled to be charged.

Notable Increase in Receipts at Birmingham.—The receipts of the Birmingham Corporation Tramways during the current financial year have shown a remarkable increase, and the year which closes on March 25 next will form a record. The resources of the undertaking are taxed to the utmost, as enormous numbers of munition workers depend upon the cars for transport to and from their work. The number of passengers carried during the week ended January 12 was 3,763,809, and the receipts £18,651, increases over the corresponding week of last year of 522,718 and £3,018 respectively. By the motor omnibuses 120,340 persons travelled, while the receipts totalled £1,072, an increase of £224 on the week. The total receipts from the tramways for the forty-one weeks to January 12 were £758,308, an increase of £105,188 over the corresponding period last year, and from the motor omnibuses £43,602, an increase of £2,930.

Edinburgh and District Tramways Company, Limited.—The report for the year ended December 31 states that the agreement between the Corporation and the company for the purchase of the company's cars and plant at the expiration of the lease in 1919 has now been signed and sealed. The traffic receipts amounted to £373,729 18s. 4d. other receipts, £2,257 14s. 11d., making an aggregate of £375,987 13s. 3d. Working and general expenses were £228,759 0s. 4d., rent to Corporation, £104,583 13s. 3d.; other charges, £8,426 8s. 11d.; making a total of £341,769 2s. 6d., and leaving a balance of £34,218 10s. 9d. Deducting the debit balance of last year of £19,894 6s. 1d., there is a credit balance of £14,324, which has been appropriated as follows:—Interest on capital redemption and special reserve fund, £3,213 19s. 4d.; interest on debentures, £753; investment depreciation, £4,500; capital redemption fund contributions, 1916 and 1917, £4,080; provision for contingent liabilities, £1,777 5s. 4d.

Unfair Treatment of the East London Railway Company.—The report for the year ended December 31, 1917, states that the accounts between the railway and other companies in respect of receipts and working expenses are not rendered, and there is no clearance of controlled traffic owing to the railway being under Government control. The number of passengers in 1916 was 9,363,822, and the number for 1917 is estimated at 9,172,734. These figures are exclusive of journeys made by season-ticket holders, of which there has been a large proportionate increase. If this increase were taken into consideration, the number of passengers carried would, it is estimated, be augmented by 600,000. At the average rate of 1·27d. for each passenger, the traffic from this source alone should now yield approximately £51,700 per annum, without taking into account the increase of 50 per cent. on some of the fares. The company has not been able to obtain any mitigation of the effect of the rules imposed by the Government on railways under its control in respect of capital expenditure which had not fructified prior to the end of the year 1913. The net result of this is that the general public have enormously benefited by the company's expenditure in electrifying its lines, while shareholders are, and will continue to be, penalised to the extent of upwards of £3,000 per annum in respect of the interest on electrification capital until the end of the period of Government control.

Dublin United Tramways Company.—The report for the year ended December 31, 1917, is summarised below in comparison with the four preceding years. The amount available for division at December 31 last was £96,236. Interim dividends amounting to £23,400 were paid in August last, leaving a balance of £72,836. The directors recommend a dividend of 6 per cent. per annum, less income-tax, on the preference shares for the half-year, and a final dividend at the rate of 5 per cent., less income-tax, on the ordinary shares for the same half-year, these figures being the same as for last year, setting aside £15,000 towards the renewal of rails and again adding £7,000 to the general reserve fund. These appropriations, together with £11,500 to be written off price of investments, bringing them approximately to their market value, absorb £82,775, leaving £13,461 to be carried to the next account.

	1913.	1914.	1915.	1916.	1917.
RECEIPTS—					
Traffic receipts	£284,816	£306,083	£317,762	£319,612	£353,838
Parcels delivery	5,769	7,129	7,467	6,987	7,313
Advertisements	4,132	4,969	4,143	3,980	3,697
Carriage of goods ...	1,025	1,551	1,874	2,094	2,361
Other receipts	1,989	2,164	2,653	2,662	2,727
Total receipts ...	£297,731	£321,896	£333,899	£335,335	£369,936
EXPENSES—					
Working and general ...	£172,604	£184,625	£201,836	£213,587	£243,152
National Insurance ...	881	945	961	915	900
Repairs to cottages ...	700	868	1,235	1,191	1,387
Parcel delivery	3,102	3,934	4,400	4,143	5,146
Goods carriage	572	868	951	1,025	1,366
Total expenses	£177,859	£191,240	£209,383	£220,861	£251,951
Balance on working ...	£119,872	£130,656	£124,516	£114,474	£117,985
Balance from last a/c ...	11,258	9,958	11,366	13,045	13,359
Interest	1,982	2,076	1,902	1,650	1,636
Total balance ...	£133,112	£142,690	£137,784	£129,169	£132,980
DEDUCTIONS—					
Interest on debentures, May 2	£26,373	£26,856	£25,421	£22,868	£21,496
Wayleaves...	15,241	14,427	13,518	12,107	11,798
Payment to Howth Co. ...	3,000	3,000	3,000	3,000	3,000
Renewals, etc.	458	360	—	—	450
	45,072	44,643	41,939	37,975	£36,744
Bal. available for division	£88,040	£98,047	£95,845	£91,194	£96,236
Div. on Pref. shares, 6 per cent. for year	£33,900	£33,225	£31,200	£27,900	£27,000
Interim div. on Ord. shares for half-year	18,645 (6 p.c.)	15,469 (5 p.c.)	14,781 (5 p.c.)	10,560 (4 p.c.)	9,900
Final div. on Ord. shares, 5 per cent. for half-year	15,537	14,987	13,819	12,375	12,375
Reserve for renewals of permanent way ...	7,000	18,000	18,000	20,000	15,000
Reserve and renewals fund	3,000	5,000	5,000	7,000	7,000
Balance to next account...	9,958	11,366	13,045	13,359	13,461
Written off investments...	—	—	—	—	11,500
	£88,040	£98,047	£95,845	£91,194	£96,236
Car mileage	7,175,852	7,690,656	7,881,938	7,440,614	7,732,897
Energy consumption ...	11,671,048	12,499,453	13,277,831	13,007,405	14,062,350

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TRAMWAY ASSOCIATIONS.

British Engineering Standards Association.—An application has been made to the Board of Trade for a licence to authorise the formation of an association to be called the British Engineering Standards Association, to be registered with limited liability without the addition of the word limited to its name.

Yorkshire Municipal Tramways Council.—A meeting of this Council was held in Leeds on January 21, in order to consider the national application for increased wages, and the invitation of Sir George Askwith to attend a general conference in London on January 29. All Yorkshire municipal tramways were represented, and Alderman W. C. Fenton (chairman) presided. A full discussion ensued. Afterwards Mr. A. R. Fearnley, honorary secretary of the Municipal Tramways Association, made an explanatory statement, setting forth the constitution, scope, and objects of the newly-appointed Tramways (Board of Trade) Committee. The members heard the statement with great interest, and afterwards expressed their high appreciation of all that had been done by Mr. Fearnley and those associated with him in connection with the establishment of the committee.

Yorkshire Tramway Managers' Association.—A meeting of Yorkshire tramway managers was held in Leeds on Thursday, January 24, 1918. The members lunched together at the Queen's Hotel, and afterwards adjourned to the Tramways Offices. The following members were present:—Messrs. J. V. Moinett (Scarborough), J. Galloway (Halifax), T. Stirk (Bradford), W. Browne (Mexborough), W. E. Nicoll (Barnsley), H. L. White (Grimsby), E. A. Paris (Dewsbury), W. McGibbon (Ossett), R. H. Wilkinson (Huddersfield), A. Daggett (Leeds), and H. England (Wakefield). The chief business was the question of a demand for a war wages or bonus of £1 per week made by the Union. Several members expressed strong views on this matter, and the secretary was requested to take steps to have the case presented to the arbitrator at the conference. Several other matters of interest to managers were introduced and discussed.

Proceedings of the Municipal Tramways Association.—The Proceedings of the Municipal Tramways Association, 1916-17, has now been published. The volume contains a full report of the annual conference and business meeting held in Blackpool in September last, and includes the presidential address by Mr. Henry Mozley; papers on Tramway Finance, by Messrs. J. Barnard, G. W. Holford, and P. Priestly; The Rule of the Footpath, by Mr. J. Dalrymple; Differentiations in Fares for Workmen on Tramways, by Mr. W. Murray; and Development of Tramways, by Mr. Arthur Ellis. A full list of the members of the association, including local authorities and managers and assistants, is given, and a useful tabulated statement of arrangements made during the war by the various local authorities with respect to allowances to dependants, war bonus, enlistments, employment of women and auxiliary drivers. Copies (price 5s.) may be obtained from Mr. A. R. Fearnley, hon. secretary, Division Street, Sheffield.

Midland Association of Municipal Tramways.—With the object of forming a Municipal Association of Midland Tramways, a meeting was held in Birmingham on Friday, February 1, under the presidency of Alderman S. Flint, chairman of the Leicester Tramways Committee and president of the Municipal Tramways Association, of representatives of the various municipal tramway undertakings in the Midland area, including Birmingham, Walsall, Coventry, Wolverhampton, Northampton, Nottingham, Derby, Lincoln, and Gloucester Corporation Tramways. The association was duly formed, and Mr. Harrison Barrow, chairman of the Birmingham Corporation Tramways Committee, was elected chairman for the ensuing year, Alderman Flint deputy chairman, and Mr. R. L. Horsfield, general manager of Walsall Corporation Tramways, was appointed secretary. It was decided to hold quarterly meetings, with special meetings as may be required. The Midland Association is to include representatives of tramway committees as well as the general managers of the undertakings.

Messrs. Ford, Bacon and Davis, engineers, of New York, announce the formation of the Ford, Bacon and Davis Corporation, organised for the purpose of conducting a general contracting business, with particular reference to industrial, public utility and power plants, steam and street railroads, docks, steamship and railway terminal facilities, subways, tunnels, hydro-electric and irrigation projects. In effect this means the continuance in corporate form of construction work which heretofore has been handled by the firm direct. The Corporation's organisation comprises men skilled and experienced in engineering and contracting work by the most modern and economical methods. It is provided with ample capital to insure the successful completion of any work which it may undertake, and starts business with important work already entrusted to it. Its headquarters are at 115, Broadway, New York, with offices at New Orleans and San Francisco. The facilities available to the new corporation from the firm of Ford, Bacon and Davis, now in its twenty-fourth year, which continues as heretofore, assure a continuance of this firm's standard of both engineering and construction efficiency, and enable both design and construction to be carried on with a degree of co-ordination which should make for economy and rapidity of work.

PERSONAL.

Mr. E. H. Hollingsworth, electrical engineer, of St. Helens, has been granted an increase in salary to £600.

Mr. W. J. Burr, borough electrical engineer of Swansea, has been granted an increase in salary of £100 per annum.

Mr. C. W. Charlesworth has been appointed commercial secretary to the Wolverhampton electricity undertaking at a salary of £300 per annum.

Corporal V. Vidler, R.E., formerly on the staff of the Hastings Tramway Company, has been awarded the Military Medal for gallant work in Italy.

Mr. L. E. Harvey, tramways manager and engineer of Ilford, has been appointed chairman of the Committee on Standardisation of Overhead Equipment.

Mr. T. Evans, of Walthamstow, has been appointed traffic superintendent of the Walthamstow Urban District Council Light Railways at a salary of £200 per annum.

Lance-Corporal F. Shackleton, formerly on the staff of the Oldham Corporation Tramways, has been awarded the Military Medal for bravery in dealing with transports under heavy shell fire.

Lieut.-Col. Henry Fowler, C.B.E., chief mechanical engineer to the Midland Railway, superintendent of the Royal Aircraft Factory, Farnborough, was one of the Knights of the new Order gazetted on January 8.

Mr. C. H. Merz, who already holds the post of Director of Experiments and Research (unpaid) at the Admiralty, has been appointed a member of the Central Committee of the Board of Invention and Research.

Mr. Alfred Baker, general manager of Birmingham Corporation Tramways, has been appointed as the representative of the Municipal Tramways Association on the Trade Advisory Committee (Disabled Soldiers and Sailors Branch).

Mr. W. C. Bexon, electrical engineer of Kilmarnock Corporation, has been given a three years' engagement at a commencing salary of £550 for the first year, with an increase of £50 at the end of the first and second years, making his salary for the third year £650.

Sergeant W. Heaton, who before enlistment was a conductor of the Halifax Corporation Tramways, has been awarded the Military Medal for gallantry in the operations of November last. Sergeant Heaton is at present in hospital in Birmingham suffering from wounds in both arms.

Mr. Ernest Holt, manager of Ashton-under-Lyne Tramways, has been granted an increase of £50 to his salary. Alderman R. S. Oldham, who moved the increase, said that Mr. Holt had served the Corporation very well. He had been receiving only the same salary as his predecessor, although the work was much greater.

Mr. H. C. B. Underdown has been elected a member of the Council of the British Engineers' Association as a representative of the Association of British Motor and Allied Manufacturers. Mr. Underdown, who is chairman and managing director of Commercial Cars, Limited, of Luton, is chairman of the Commercial Vehicle Section of the A.B.M.A.M.

Mr. A. Durrant, superintendent of the overhead equipment of the Yarmouth Corporation tramways, who has been connected with the undertaking for nearly twelve years, has resigned to take up another appointment. He has been presented with a wall barometer by the staff. The presentation was made by Mr. F. L. Turner, general manager, on behalf of the employees.

Mr. J. N. Wilson, who has occupied the position of secretary and treasurer of the Glasgow Corporation Tramways since 1904, has been appointed secretary of the Tramways (Board of Trade) Committee, and has taken up his duties in London. Mr. Wilson has been in the service of the Glasgow Corporation Tramways department since the Corporation took over the working of the tramways in 1894 under the management of Mr. John Young.

Captain J. Steven Hamilton, of the West Yorkshire Regiment, second son of Mr. J. B. Hamilton, general manager of Leeds tramways, has received his captaincy and the D.S.O. for services in a brilliant advance by the West Yorkshires. Captain Hamilton is one of five brothers who have all served in the West Yorkshires, and one of whom was reported missing some months ago. Prior to the war he was assistant engineer to the Leeds Corporation Tramway department.

Board of Trade Appointments.—The President of the Board of Trade has made the following appointments:—Mr. S. J. Chapman to be assistant secretary (in charge of the General Economic Department); Mr. H. F. Carlill to be assistant secretary (in charge of the Industrial Power and Transport Department); Mr. P. Ashley to be assistant secretary (in charge of the Industries and Manufactures Department); Mr. A. W. Flux to be assistant secretary (in charge of the Statistical Department).

Mr. George J. Gibson, traffic manager of the Manchester, Sheffield and Nottingham section of the Great Central Railway, has been appointed Director of Railway Transport under the Ministry of Food. Mr. Gibson has been with the Great Central Railway Company for fourteen years, and before that he was in the service of the London and South Western Railway. While Major Clow, superintendent of the line of the Great Central Railway, was absent in France last year on special duty, Mr. Gibson acted as superintendent.

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Mr. Leo. Swain, manager of the solid tire department of George Spencer Moulton and Company, Limited, 239, Deansgate, Manchester, has been appointed chairman of the Manchester centre of the Cycle and Motor Trades Benevolent Fund, and co-operating vigorously with his fellow officials, he had the pleasure of being able to announce at the first meeting over which he presided this month that there had been a splendid addition to the list of guinea members, also transfers from the five-shilling membership to the guinea section, and a patron fee of £100 received from Messrs. Herbert Frood Company, Limited.

Mr. J. M. McElroy.—The Manchester City Council on January 3 approved a resolution of the Tramways Committee sanctioning the transfer of Mr. J. M. McElroy, the general manager of the Corporation tramways department, from the Admiralty to the Board of Trade, so as to enable him to serve on the Tramway Committee recently appointed by the Board. The Admiralty asked that they might be permitted occasionally to utilise Mr. McElroy's services for special work in connection with the department in which he had been serving, and the request was granted, it being understood that Mr. McElroy will attend in Manchester to all matters of special importance arising in connection with the work of the Tramways Committee.

Mr. G. F. Moller, manager of Lanarkshire Tramways, brought an action in Hamilton Sheriff Court against William Barton for alleged slander. The pursuer alleged that while travelling in a car, accompanied by his wife and family, the defendant had made the slanderous statement that he (pursuer) was of German birth, a statement which had caused him much annoyance and might have had disagreeable consequences. For the defender, an apology was submitted and a withdrawal of the statement absolutely, besides an offer to hand over a donation to the Red Cross. The pursuer accepted the apology and the accompanying offer, and Sheriff Shennan said the defender had acted wisely in thus making amends for what he knew to be untrue.

Mr. F. A. Hammond, an official of the Nova Scotia Tramways and Power Company, has sent home to Leeds an account of his experiences in the recent disastrous explosion of the munition ship at Halifax, when he was able to render first aid to some of the workers. The tramway cars stood in the streets deserted by their crews, who naturally thought of their own families, and went to their assistance. The electricity was only interrupted for half an hour, so that energy for both the tramway and electric light services was available in so far as they could be operated. Two electric cars were blown to atoms, and five of the employees were killed, including an inspector. A 4·7 gun, mounted on the steamship which blew up, was found three and a half miles away.

Alderman C. F. Spencer, chairman of the Halifax Tramways Committee, has been appointed director of the new department of the Ministry of Food. It is understood that the provision of travelling kitchens to be run on the tramways to ensure rapid distribution is part of the contemplated scheme. **Mr. G. W. Holford,** general manager of Salford Corporation Tramways, is to act as assistant to Alderman Spencer. The Mayor of Salford has received a communication from Lord Rhondda, asking for the transfer of the services of Mr. Holford to the Ministry of Food. Mr. Holford was joint author of a paper on "The Carriage of Goods on Tramways" which was read at the conference of the Municipal Tramways Association in September last, and was given in full in the issue of this journal of October 18, 1917.

Mr. A. F. Pease has been appointed a Lord Commissioner of the Admiralty, with the title of Second Civil Lord. The need for the appointment of another civil member of the board, in order to meet the great increase in its administrative work, was mentioned by the First Lord of the Admiralty at the second reading of the Consolidation Bill on November 1. The Second Civil Lord will undertake during the war the administration of the director of the works department, and the programme of naval works. Mr. Pease is an elder brother of Mr. H. Pease, M.P., the Assistant Postmaster-General, and is chairman of Pease and Partners. He has had an active business career in the North, in addition to his associations with Pease and Partners. He is chairman of the Mine Owners' Association, a director of the North Eastern Railway Company, and has been a prominent member of the Durham County Council.

A Leeds Delegation Visits the Western Front.—An invitation was recently sent by the War Office to Leeds Corporation to appoint representatives to visit the front in France and Flanders. The delegates chosen included Aldermen R. A. Smithson (chairman of the Tramways Committee), C. H. Wilson, A. Willey, H. Brown (vice-chairman of the Tramways Committee), G. Ratcliffe, and Councillor T. Rushton. The party left Leeds via London for Boulogne on Thursday, January 17, and their visit occupied five days, which were crowded with experiences of the greatest interest. The visitors travelled over 100 miles by motor cars each day, and obtained vivid impressions of life in the trenches, of the desolation of Ypres and other towns that were famous for their old-world charm, but are now little more than heaps of broken stone and tottering walls. Not less arresting in another sense were the activity and wonderful organisation at the base camps and centres of supply. The party brought back with them increased confidence that the British line would be able to do more than hold its own whatever force the enemy may yet be able to throw against them.

Staff-Captain W. Alan Fraser, R.E., who has been killed in action, was formerly tramway manager and electrical engineer to Nelson Corporation. He had been mentioned in despatches by Sir Douglas Haig.

Lieut. J. V. Knox, R.F.C., and London Regiment, who was accidentally killed in this country on January 4, was the eldest son of Mr. Vesey Knox, K.C. He was educated at Wixenford, Wokingham, and Rugby. After a short period of service in the Northamptonshire Regiment, which he entered from the Royal Military College, he became a clerk in the Principal Probate Registry. He joined a battalion of the London Regiment on August 4, 1914, and served in France from February, 1915, to July, 1916, when he was attached to the Flying Corps. He broke his jaw in an accident while training in the autumn of 1916, but recovered, and recently qualified as a pilot.

We regret to have to announce the death on active service of **Lieut. J. W. Dugdale** (Road Battalion). Lieut. Dugdale will be remembered by our readers as the former general manager of the Oldham Corporation Tramways, and previously connected with tramway undertakings at Ashton, Oxford, and Sheffield. Lieut. Dugdale resigned his appointment at Oldham soon after the commencement of the war, and took up a post with the Ministry of Munitions, afterwards transferring to the Road Battalion. He sustained shell shock and trench fever shortly after he arrived at the front, and died in the Rouen Military Hospital on January 3. Although Lieut. Dugdale was well past the military age, his well-known enthusiasm prompted him to offer his services where he believed they would be of the best value to his country. His death has added another name to the already long list of those connected with the tramway world who have fallen in the war.

LONDON "SAFETY FIRST" COUNCIL.

Safety Devices for Motor Vehicles and Practical Suggestions Competition.

A meeting of the London "Safety First" Council was held on January 17, at the Guildhall, Westminster, when Mr. W. Joynson-Hicks, M.P., presided. On the recommendation of the General Purposes Committee, it was agreed to hold the first annual meeting on February 18, and to submit the annual report of the Council at that meeting; to invite the affiliated authorities and organisations to re-elect delegates for the ensuing year; that, so far as possible, each member of the Council should serve on at least one committee; also, to appoint a Schools' Propaganda Committee, to deal with "Safety First" in schools.

The Publicity Committee reported that at December 21 last, 48,000 pupils attending 311 L.C.C. and extra-Metropolitan schools had entered for the "Safety First" essay competition for school children. The Drivers' Educational Committee advised that the widest publicity be given to the need for a safety device to be attached to the front of motor vehicles, with the object of preventing traffic accidents. Following an exhaustive test of a signalling device for motor-propelled vehicles, invented by Mr. A. H. Kelday, the committee recommended the apparatus as a suitable and inexpensive means of giving efficient direction signals.

The Council adopted the recommendation of the Street Safety Committee, that, as the present practice of forming queues at certain places has proved advantageous, it is desirable that a scheme for its extension should be formulated, and that the police, local authorities, tramway corporations, and omnibus companies operating in the Greater London area be so informed.

Sanction was given to the issue of a new poster, "Don'ts for Horse Drivers," and to the preparation of a poster dealing with dangers to employees engaged on electrified railways.

The Publicity Committee recommended, and the Council agreed to the promotion of a "Safety First" practical suggestions competition, with the object of encouraging by the award of money prizes and diplomas the general public to submit practical suggestions for the prevention of traffic accidents in the streets and on the railways, and casualties in factories, workshops, etc., in the Greater London area. First and second prizes of one guinea and half-a-guinea respectively, together with a diploma, will be awarded each month until further notice, for the best suggestions received during each month, commencing February. Suggestions must be made on the special form which can be obtained by sending a stamped addressed envelope to the Honorary Secretaries, London "Safety First" Council, 31, Westminster Broadway, S.W.1.

The proceedings terminated with votes of thanks to the chairman (Mr. W. Joynson-Hicks, M.P.), the vice-chairmen (Sir E. Smith, L.C.C), and the Mayor of Hampstead, and the honorary secretaries (Messrs. H. E. Blain, A. P. Johnson, and A. E. Cave) for their services during the past year, and to the Middlesex County Council for the use of its Council Chamber.

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TRAMWAY AND LIGHT RAILWAY NOTES.

BARROW.

DRIVER FINED FOR REFUSING TO STOP.

At Barrow Police Court a tramcar driver was fined 10s. for a breach of the tramway by-laws by refusing to stop to pick up an intending passenger when requested. It was stated that the would-be passenger was at a stopping place, and that there was plenty of room in the car. The chairman mentioned that this was practically the first case of the kind that had been before the Court.

BELFAST.

NEW POWER STATION SANCTIONED—PROMPT CLEARANCE OF SNOW.

At a meeting of Belfast Tramways Committee the town solicitor submitted letters received from the Board of Trade giving their consent to the application of the Corporation for permission to erect an electrical generating station on the Hamilton Road site. At a meeting of Belfast Tramways Committee the general manager reported that owing to the severe snowstorms during the fortnight ended January 21, the department had experienced very trying and difficult times, but that he was pleased to state the full service of cars had been maintained on all routes. Several snow-ploughs were employed with excellent results, having travelled roughly 1,150 miles and distributed 60 tons of salt over the whole track.

BIRMINGHAM.

SEPARATE TRAMWAY TRACKS—GOODS TRAFFIC.

Birmingham Corporation has adopted the report of the Public Works Committee with reference to the proposed widening of several main arterial roads. The width proposed is 120 ft., and a separate track will be provided for tramways to be laid on sleepers. The scheme will be carried out over a period of three years. It is hoped to carry goods traffic on an extensive scale on the tramways.

BLACKPOOL.

EFFICIENT SNOW PLOUGHS.

Referring to the heavy snowfall on Monday, January 14, the *Blackpool Times* alludes to the excellent arrangements made by the tramways department to keep the lines clear of snow, which allowed the tramway service to be continued. Snow ploughs were kept running over the lines, and effectually prevented the snow from accumulating. Prevention in this case proved better than cure, and real economy resulted from the forethought of the management, which was prepared for the emergency.

DUNDEE.

A HORSE ELECTROCUTED.

On the Dundee and Broughty Ferry tramways, on January 27, a horse was electrocuted. It appears that on the Belsize Road route an electric trolley wire had been broken and both ends lay on the road. Inspector Gordon, of the Dundee City Police, who was on duty regulating the passing traffic, shouted to the driver of an approaching dogcart to stop, but he drove on, and the horse came in contact with the wire and was instantly killed. The occupants of the trap were thrown out, and one of them received a slight shock from the live wire.

GLASGOW.

ACCIDENT CAUSED BY EXCESSIVE SPEED AT CURVE—SCARCITY OF LABOUR.

At a public inquiry, before Sheriff Harvey and a jury in Glasgow, on January 17, regarding the tramway accident in Victoria Road, on December 5 last, facts similar to those which had been adduced at the Board of Trade inquiry were brought forward. The jury returned a formal verdict, and added a rider stating that the accident was caused by the car taking a curve at excessive speed, and through the brakes not being applied soon enough. Owing to the insufficient light the driver failed to see the curve in time to prevent the accident. They recommended that the stopping places at that and all similar curves be placed before the curve instead of in or round the curves. Mr. M. W. Montgomery, convener of the Glasgow Corporation Tramways Committee, replying to a question at a recent Council meeting, said that it was impossible, owing to the scarcity of labour and materials, to keep the tramway track in such good order as it was prior to the war. Before the war a staff of eight hundred men were employed on the track, but there were now only five hundred constantly employed on night and day shifts.

HALIFAX.

CURTAILING THE SERVICES.

The tramway service on the Warley Road circular route is to be discontinued as from January 14. The proposal is giving rise to much complaint, but the tramways committee have decided that it is impracticable for them under present conditions to maintain the service.

HULL.

EXEMPTION FOR TRAMWAYMEN.

Mr. J. Wilkinson, tramways engineer of Hull, recently applied for exemption for the driver of a tower wagon and the driver of the rail grinding machine. The former was 41 years of age and in category A, and the other was 33 years of age and was classed B1. Mr. Wilkinson stated that the retention of the men was necessary in the public interest, and exemption was granted in both cases.

KEIGHLEY

DIFFICULTY OF EFFECTING REPAIRS.

Out of ten trackless trolley cars owned by Keighley Corporation only two are capable of service. The cause is the extraordinary difficulty in getting repairs effected. The motor, which is of Austrian manufacture, is reported to be the cause of the trouble.

LEEDS.

RESTRICTED SERVICES OWING TO LACK OF MATERIALS—PARCEL SERVICE.

The Leeds Tramways Committee are suspending, for the present, the services on Street Lane, Lawnswood, and West Street. The object is to release cars needed for more essential routes and to provide material for the repair of the track. New rails cannot be obtained, and it is essential to use the rails from these sections for lines on which there is a very heavy traffic. If the proposal meets with the sanction of the City Council, it is proposed by the tramways committee to take up a single line of rail in each section in the first place, and to use it for repairs elsewhere. The scheme for carrying parcels on the tramway cars, and thus to some extent relieving the transport difficulty, has been advanced a stage further. It is hoped to bring the scheme into operation shortly. Tradesmen in the city have agreed to use the cars for the despatch of parcels, and arrangements are being made to establish receiving stations in the outskirts.

LEICESTER.

A QUESTION OF FREE PASSES FOR THE TRAMWAYS COMMITTEE.

The minutes of the Tramways Committee submitted to the Leicester Town Council on January 29 included a resolution that "each member of the committee be supplied with a free pass on the tramway cars, and be authorised to ring on and off when travelling on crowded cars, and to give what assistance is necessary." It is stated that only three members of the committee, including the chairman, voted against the resolution. At the Council meeting Alderman Banton, who submitted the report in the absence of Alderman Flint, the chairman, asked permission to withdraw the resolution. He had, he said, a very good case to make out in regard to the powers sought for the individual members of the committee to assist when the traffic was congested. They were all aware that at times the conductors and conductresses were overworked, and the consequence was that many fares were lost, while accidents occurred through the conductors being unable to be on the rear platforms at the time of starting and stopping. Alderman Banton went on to say that the idea was to make the members of the committee as useful as possible in cases of this kind, when the Mayor said he thought he could say with safety that the Council would very graciously consent to the committee withdrawing the proposal. After some discussion the Council agreed, with one dissentient, to the Mayor's suggestion.

LIVERPOOL.

MUNITION TRAFFIC HAMPERED BY LACK OF MATERIAL.

The Liverpool Corporation Tramways Committee are joining with the employers at certain munition factories and engineering works in the neighbourhood of the docks in making representation to the Ministry of Munitions and the Board of Trade so as to secure if possible additional material and labour in order to augment the present tramway service.

LLANDUDNO.

PRICE OF ENERGY AND SUNDAY RUNNING.

The question at issue between Llandudno Council and Llandudno and Colwyn Bay Electric Railway Company is still a subject of discussion locally, and it may be hoped that an arrangement will yet be come to. The company buy energy for working their line from the Council, and the latter have decided to terminate the agreement if terms cannot be settled before the end of twelve months. The termination of the supply would mean the stoppage of the working of the tramway, unless the company should be able to make some other arrangement. It appears that the company have offered to increase the price paid for current, provided that the Council sanction the running of the cars on Sundays. There is a strong feeling in the Council against the latter course, as the Welsh Sabbatarian element is concerned. At the same time it has been pointed out that the railway company is the only paying customer which the Council have.

LONDON.

IMPROVED TRAFFIC REGULATIONS.

Certain new regulations came into force on the London County Council tramways on January 28 which should make for more expeditious handling of the traffic. One refers to change points for transfer ticket holders to and from the tramway subway. Passengers from the subway will change at Waterloo Bridge, and those to the subway, from Westminster Bridge, must change at the point opposite Westminster Station where the single-deck cars cross over for the return journey. To meet the congestion of traffic at the Victoria tramway terminus in Vauxhall Bridge Road during the rush period every evening and after 12 noon on Saturdays, passengers will leave the cars by the front platforms after the cars have passed

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the new cross-over which has just been completed. An appeal is made to the public to co-operate with the tramway officials by conforming to the new regulation which has been designed with a view to improving the conditions at Victoria which were fast becoming very dangerous.

SOUTHPORT.

SOUTHPORT AND BIRKDALE TRAMWAYS.

Southport Corporation Tramways Committee have come to an agreement with the Southport and Birkdale Tramways Company for the acquisition of that company's property. Mr. E. Clayton, chairman of the Tramways Committee, and the town clerk, Mr. J. E. Jarratt, arranged the terms, and these have been approved by the Town Council. The arrangements are subject to the necessary departmental sanctions. The purchase price is to be £35,000 as from January 1 of this year. The terms include the payment of £1,200 to the Corporation on revenue account, in addition to the rent outstanding at the end of last year, and the deferment of the purchase money at the Corporation's option until July, 1922.

WALTHAMSTOW.

APPRECIATION OF THE STAFF.—SPLENDID SERVICE OF THE WOMEN.

Mr. William Murray, manager of Walthamstow Council tramways, in his report for the year ended March 31 last, pays a tribute both to the men and women employees. He expresses his highest appreciation of the way in which the men have stuck to their work during the past two and a half years. The motormen were called upon to work seven days a week practically throughout the whole of the year. In many cases men who had finished their normal day's work returned after a brief interval to take extra cars out in the evenings. None of the motormen received their annual holidays. Mr. Murray commends also the women conductors, who have rendered "splendid service." Although when he first recommended their employment much misgiving was felt, but it is the general opinion to-day that they are a credit to the department. While not anxious to take the responsibility of introducing women drivers, Mr. Murray says that should the need arise, he would have no hesitation in recommending the Council to employ women in that capacity in view of the experience in other towns. Women cleaners were first employed by the department in September, 1916. Male cleaners work during the night; sweep out the cars, wash the trucks and generally do the heavy work. The women cleaners come on at 9 a.m. and work eight hours, ceasing at 6 p.m. They are responsible for cleaning the windows, brass work, canopies, seats, etc. Mr. Murray reports that their work has been quite satisfactory.

YORK.

DELIVERY OF PARCELS BY TRAMWAYS.

The Electricity and Tramways Committee have appointed a sub-committee who are studying with the Transport Sub-committee of the Food Control Committee the details of a proposal for the delivery of parcels by the tramway cars.

CONTRACTS AND ORDERS.

Southend Council have offered to sell three omnibus bodies to Morecambe Council.

Messrs. Dyes and Young have an order from Glasgow Tramways Committee for commutators.

P. R. Jackson and Company, Limited, have an order from Glasgow Corporation for armature coils.

Micanite and Insulators Company, Limited, are filling an order for leatheroid from Glasgow Tramways Committee.

Frederick Smith and Company, Limited, Salford, have received an order from Glasgow Corporation for trolley wire.

Leeds Electricity Committee have placed an order with Richardsons, Westgarth and Company, Limited, for a 6,000-KW. turbo-generator.

Bradford Electricity Committee have accepted the tender of Hicks, Hargreaves and Company, Limited, for the supply of surface condensing plant.

S. F. Bowser and Company are supplying an oil storage and measuring system, together with pumps, to Sheffield Electricity and Tramways department, at a price of £445.

Glasgow Electricity Committee have decided to purchase a second 15,000-KW. set for Dalmarnock at £110,000 from the British Westinghouse Electric and Manufacturing Company, Limited.

Melbourne Tramways Board have accepted the tender of the Australian General Electric Company at £39,720 for the supply of electric lighting plant and apparatus for the whole of the cars.

Lancaster Council have obtained the consent of the Ministry of Munitions to the purchase of five motor omnibuses in order to provide for the transport of the workers employed by the new munition works.

The Brush Electrical and Engineering Company, Limited, have received an order for a turbo-alternator from Watford Urban District Council, at £8,980. The Stirling Boiler Company are supplying a boiler at £1,750 to the Council.

Manchester Electricity Committee have accepted tenders for the supply of cable from C. Macintosh and Company, Limited, Manchester, the Western Electric Company, Limited, and Callender's Cable and Construction Company, Limited.

Siemens Brothers' Dynamo Works, Limited, 38 and 39, Upper Thames Street, London, E.C.4, notify us that Wotan traction type lamps have been adopted on the London County Council tramway cars, and a contract has been placed with them covering the total requirements for the ensuing twelve months. The number of lamps required will be approximately 150,000.

PATENT LIST.

Abstracted for "The Tramway and Railway World" from the Official Journal of Patents.

***** If the inventions have been communicated the names of the communicators are given below in italics.**

APPLICATIONS FOR LETTERS PATENT.

Gas storage reservoirs for motor vehicles (108)—E. G. E. Beaumont.
Excess speed alarm for tramway cars (38)—C. Coffey, H. S. Dix and J. T. Pryor.
Change speed gear for motor vehicles (189)—Daimler Company and T. Dawson.
Arrangement for securing electric contact in overhead trollies for tramway cars, etc. (79)—A. C. Franklin.
Means for raising tramway cars from rails (241)—J. Hoggett.
Lifting jacks for vehicles (68)—F. L. Rapson.
Lubricators (128 and 129)—F. H. Smith.
Automatic couplings for railway vehicles (104)—C. O. Svensson and A. L. Wetterholm.
Carburetters, etc., for motor cars employing coal gas, etc. (301)—H. F. Webb.
Laminated springs for vehicles (742)—Albion Motor Car Company and T. B. Murray.
Anti-skidding device for motor vehicles (322)—F. S. Allin and J. E. Franklyn.
Change speed gearing (713)—C. A. Allison (*Soc. Anon. H. and A. Dufaux et Cie*).
Steering mechanism for motor vehicles (448)—E. H. Belden.
Motor vehicles (622)—E. H. Belden.
Fluid pressure jacks (434)—G. Bowman and E. Graham.
Electric starting apparatus for motor vehicle engines (615, 616, and 617)—C. L. Breeden and H. Lucas.
Couplings (442)—British Thomson-Houston Company (*General Electric Company*).
Differential gearing for motor vehicles (513)—W. E. Burgess.
Automatic mechanical brake for railway vehicles (606)—J. H. Corbin, J. Gamblin, and E. H. Pearce.
Overhead system of electric traction (431)—A. Orom.
Automatic emergency brake or drag for motor omnibuses (641)—H. Pepper and D. Scott.
Apparatus for preventing clutch of motor car engines engaging too quickly (325)—L. Perrett.
Motor vehicles (674)—J. C. Watson.
Motor vehicles (866)—J. K. Brimlow.
Tramway car trucks (833)—F. H. Critchley.
Semi-perpetual motion for trains and tramways (781)—W. Fawley.
Motor vehicles (1,122)—A. G. Grice.
Jack for raising motor cars (947)—S. M. Whittingham.
Variable speed gearing (1,078)—Kingsland Research Syndicate and M. F. Torazzi.
Gas containers for storing gas upon motor vehicles (848)—H. Morgan.
Gas containers for use on motor vehicles (1,128)—J. S. Peress.
Flexible gas containers for motor vehicles (879)—J. E. Wild.
Combustion engines (1,305 and 1,307)—Albion Motor Car Company.
Valve operating mechanism for combustion engines (1,306)—Albion Motor Car Company.
Variable speed gears (1,299)—S. A. Bagley.
Electric starting and lighting systems for automobiles (1,277)—J. Bethenod.
Railway car brakes (1,532)—P. Cheselka.
Railway rail securing means (1,396)—T. H. Kruse.
Railway traffic controlling apparatus (1,246)—McKenzie, Holland, and Westinghouse Power Signal Company.
Railway train controlling systems (1,329)—McKenzie, Holland, and Westinghouse Power Signal Company (*Union Switch and Signal Company*).
Steering gear (1,194)—J. W. Mackenzie (*F. de S. Carrico and H. S. Hall*).
Motor vehicles (1,279)—W. Neuts.
Lifting jacks (1,562)—F. L. Rapson.
Mechanical arrangement to enable vehicles to travel on or off rails (1,160)—E. Richards and R. W. Richards.

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SPECIFICATIONS PUBLISHED.

1916.

Indicating device for road vehicles (9,868—*111,862*)—J. Gann.

Combined differential gear and engine crank shaft for motor vehicles (15,912—*111,872*)—S. E. Alley.

Appliance for announcing to passengers in tramway or other vehicles the name of the next stopping place or station (17,975—*111,903*) W. L. Box.

1917.

Brake mechanism for railway and tramway rolling stock (110—*111,742*)—Birmingham Railway Carriage and Wagon Company and H. H. Holloway.

Differential gearing (1,284—*111,752*)—Jandus Arc Lamp and Electric Company and A. Denman Jones.

Starting gear for motor vehicles (2,042—*111,759*)—Triumph Cycle Company and G. E. Stanley.

Speed indicators (4,625—*111,785*)—W. Chadburn and W. R. Chadburn.

Railway rail and chair plate therefor (6,310—*111,795*)—B. B. Betts.

Starting apparatus for motor car internal combustion engines (11,991—*111,092*)—Akt.-Ges. Brown, Boveri et Cie.

Trolley wire systems for use on electric railways and tramways (13,551—*111,822*)—P. Dawson and F. W. Fawdry.

Motor-driven road vehicles (1,066—*111,941*)—G. F. Joseph and W. H. Brown.

Coupling for railway and other vehicles (2,051—*111,951*)—D. John.

Direction signals particularly for motor vehicles (11,487—*111,989*)—J. Anderson.

Means for containing and controlling gas bags or gas reservoirs upon motor vehicles (14,517—*111,999*)—R. Blakoe.

Means for holding tramway and railway tickets (2,670—*112,066*)—T. Bettney.

Compensating apparatus for wires used in railway signalling (2,979—*112,067*)—R. L. Powell.

Means for lubricating the engine of motor road vehicles (4,859—*112,080*)—A. J. Dawson and Hillman Motor Car Company.

Means for carrying gas upon motor vehicles (14,874—*112,115*)—A. Phillips.

Fish plates for switch tongues on railways (16,308—*112,118*)—A. V. Naylor.

Solid rubber tires (1,052—*112,176*)—Wood-Milne, Limited, and T. H. Roberts.

Improved means for signalling the direction of travel of trackless vehicles (1,413—*112,180*)—H. T. Dobbs and E. T. John.

Variable speed gearing for automobiles (2,170—*112,189*)—H. G. O. Robinson.

Railway signalling apparatus and apparatus for stopping trains independently of drivers (2,453—*112,191*)—E. S. Tiddeman.

Change speed gear for motor-driven vehicles (4,741—*112,211*)—F. Savel.

Spring control for automobiles (10,631—*112,244*)—M. N. Knudson.

Sleepers and rail fastenings (14,195—*112,254*)—C. E. Peterson.

Means of controlling, retaining and compressing gas bags or reservoirs for motor vehicles (15,513—*112,257*)—R. Blakoe.

Colonial and Foreign Tramways Traffic Returns.

NAME OF COMPANY.	1917. WEEKS ENDED.					1918. WEEKS ENDED.					AGGREGATE.		
	Jan. 6.	Jan. 13.	Jan. 20.	Jan. 27.		Jan. 5.	Jan. 12.	Jan. 19.	Jan. 26.		Wks.	1918.	Increase or Decrease.
	£	£	£	£	£	£	£	£	£	£		£	£
Anglo-Argentine	51,929	51,246	46,818	48,956	...	53,008	54,406	52,850	49,151	...	4	209,415	+ 10,466
Calcutta ... ... Rs.	54,710	73,725	73,899	71,505	...	57,172	74,367	74,579	71,041	...	3½	277,159	+ 3,320
Madras	(2 weeks)	36,493	...	...	...	(2 weeks)	37,736	...	...	...	2	37,736	+ 1,243
Pernambuco	3,550	3,655	...	...	...	5,467	4,651	...	...	...	2	9,370	+ 2,165

Companies issuing Monthly Statements.

	1916.					1917.	1917.					1918.	Wks.	AGGREGATE.	
	August.	Sept.	October.	Nov.	Dec.	Jan.	August.	Sept.	October.	Nov.	Dec.	Jan.		1917-18.	+ or −.
	£	£	£	£	£	£	£	£	£	£	£	£		£	£
Ballarat & Bendigo ..	2,791	2,850	3,390	3,430	3,090	...	2,693	2,816	3,560	3,552	3,179	...	36	28,844	+ 214
Brazilian Traction Mlrs	7405000	7138000	7262000	7160000	..	...	8064000	7925000	8006000	7695000	...	...	47	84,131,000	+6,558,000
Brisbane	37,900	32,530	32,760	26,740	32,910	...	36,925	31,600	33,580	32,900	35,019	...	52	396,339	+ 6,269
British Columbia $	423,738	414,811	445,263	472,767	496,959	...	454,425	457,709	491,964	525,629	555,555	...	26	2,923,660	+ 258,275
Buenos Ayres Lacroze	36,431	37,077	39,670	39,133	40,106	...	39,111	33,655	39,067	39,679	40,901	...	26	230,476	− 419
Burma	24,413	23,749	29,768	26,824	32,551	...	26,714	26,168	28,955	27,761	26,224	...	21	135,822	− 1,483
Cape Town	13,394	...	14,238	...	...	...	15,480	...	17,128	16,522	19,803	...	—	—	—
Carthagena & Herrerias	2,081	1,779	2,539	2,252	2,399	3,982	4,164	4,306	2,805	3,932	4,424	4,011	4	4,011	+ 129
Cordoba	13,851	13,313	13,533	12,836	...	...	14,278	12,463	12,481	13,339	...	...	34	108,715	− 2,137
East India	2,522	2,523	2,080	1,942	2,120	1,836	1,562	1,512	1,229	871	1,099	1,176	26	7,449	− 5,574
Kalgoorlie	3,021	2,788	...	...	...	...	2,911	3,063	...	...	...	...	39	24,128	+ 861
La Plata	3,793	3,993	4,434	3,140	4,437	4,315	4,076	3,450	4,069	3,741	4,606	4,711	4	4,711	+ 396
Lima	...	33,340	33,303	33,608	37,171	...	...	35,621	37,537	37,466	41,697	...	52	438,895	+ 30,725
Manaos ... ... Rs.	147,774	141,286	...	...	...	...	150,657	157,761	158,078	...	...	...	—	—	—
Mexico ... ... $	...	...	...	...	...	...	...	...	...	...	...	...	—	—	—
Monte Video	26,044	26,711	28,729	28,404	31,364	33,341	28,860	29,426	30,153	31,060	34,025	36,016	13	101,101	+ 7,992
Peruvian ... ... $	895,900	911,910	945,590	925,820	990,842	935,130	979,430	950,740	1047220	1034790	1101090	1189350	30	7,277,620	+ 836,998
Port Elizabeth	2,863	...	3,131	...	...	...	3,360	...	3,885	3,807	4,920	...	—	—	—
Rangoon	4,253	4,137	5,043	5,033	4,904	4,633	4,788	5,163	5,667	5,358	5,438	5,361	4	5,361	+ 728
Toronto ... ... $	889,241	913,535	907,460	911,829	...	...	1039819	1023517	1043886	1052000	...	...	47	10,986,998	+1,161,945
Winnipeg ... $	249,795	267,497	278,817	282,899	...	...	248,457	267,170	301,722	305,881	...	...	47	3,039,397	+ 16,227

(Continued on page 112)

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TRAFFIC RETURNS—*continued.*

Tramways and Omnibus Undertakings in the United Kingdom.

NAME OF COMPANY OR CORPORATION.	1917. WEEKS ENDED.					1918. WEEKS ENDED.					AGGREGATE.		
	Jan. 6.	Jan. 13.	Jan. 20.	Jan. 27.		Jan. 5.	Jan. 12.	Jan. 19.	Jan. 26.		Wks.	1918.	Increase or Decrease.
	£	£	£	£	£	£	£	£	£	£		£	£
Aberdare U.D. Council	407	378	374	365		507	440	430	453		42	18,947	+ 1,881
Aberdeen Corporation	2,237	1,835	1,789	1,718		2,496	2,182	2,020	2,050		34	73,651	+ 8,422
Accrington Corporation	*	...	...	...		...	...	...	...		—	—	—
Ayr Corporation	321	257	253	246		430	321	291	319		37	18,527	+ 2,152
Bath Electric	*	...	...	...		...	...	...	...		—	—	—
Belfast City	5,832	5,528	5,450	5,247		6,880	6,926	6,818	7,231		43	282,769	+ 37,431
Birkenhead Corporation	1,589	1,483	1,455	1,394		1,811	1,766	1,811	1,934		[43]	79,443	+ 12,810
Birmingham Corporation	16,447	15,632	16,013	15,426		19,937	18,651	18,876	19,851		43	797,035	+112,477
Birmingham Corp. Motor Omnibuses	958	848	888	834		1,180	1,072	1,071	1,166		43	45,840	+ 3,446
Blackburn Corporation	1,206	1,096	1,053	1,029		1,595	1,224	1,245	1,379		43½	64,322	+ 10,555
Blackpool and Fleetwood	*	...	...	...		...	...	...	...		—	—	—
Blackpool Corporation	*	...	...	...		...	...	...	...		—	—	—
Bolton Corporation	*	...	...	...		...	...	...	...		—	—	—
Bournemouth Corporation	1,926	1,834	1,670	1,627		2,186	2,198	2,308	2,396		43½	111,067	+ 11,589
Bradford Corporation	6,769	6,466	5,966	5,939		7,812	7,086	6,588	7,472		43	329,763	+ 37,493
Brighton Corporation	*	...	...	...		...	...	...	...		—	—	—
Bristol	*	...	...	...		...	...	...	...		—	—	—
Burnley Corporation	1,704	1,624	1,474	1,476		1,995	1,790	1,718	2,060		—	—	—
Burton-on-Trent Corporation	293	280	282	264		346	344	371	370		43	13,763	+ 1,696
Bury Corporation	1,508	1,280	1,293	1,214		1,698	1,357	1,415	1,591		43½	70,749	+ 9,242
Cardiff Corporation	*	...	...	...		...	...	...	...		—	—	—
Chatham and District	652	1,072	1,065	1,021		452	1,021	1,057	1,176		4	3,706	— 104
Chesterfield Corporation	*	...	...	...		...	...	...	...		—	—	—
Colne Corporation	*	...	...	...		...	...	...	...		—	—	—
Cork Electric	...	742	421	430		...	726	531	576		4	1,834	+ 240
Croydon Corporation	*	...	...	...		...	...	...	...		—	—	—
Derby Corporation	1,065	1,006	998	965		1,275	1,114	1,129	1,245		43	52,365	+ 3,849
Dover Corporation	*	...	...	...		...	...	...	...		—	—	—
Dublin and Lucan	*	...	...	...		...	...	...	...		—	—	—
Dublin United	3,874	6,169	5,875	5,779		4,182	6,824	6,842	7,100		4	24,948	+ 3,192
Dundee City	1,653	1,309	1,290	1,268		1,819	1,595	1,413	1,485		36½	56,343	+ 5,788
East Ham Corporation	1,207	1,191	1,160	1,176		1,210	1,228	1,170	1,311		43	58,965	+ 3,573
Exeter Corporation	399	362	334	304		360	335	358	366		43	17,199	— 117
Gearless Motor 'Buses	*	...	...	...		...	...	...	...		—	—	—
Glasgow Corporation	26,419	22,963	22,952	22,731		29,947	24,874	21,965	24,081		34½	905,909	+ 99,724
Glossop (Urban Elec. Supply Co.)	138	139	123	122		184	169	157	177		4	688	+ 167
Halifax Corporation	2,093	1,959	1,831	1,791		2,570	2,092	1,851	2,024		42½	103,989	+ 10,019
Halifax Corp. Motor Omnibuses	54	48	45	45		58	48	41	47		42½	2,087	— 33
Hastings and District	1,055	942	883	832		921	836	855	1,004		4	3,616	— 96
Huddersfield Corporation	2,793	2,626	2,537	2,506		3,093	2,893	2,856	3,239		43	137,493	+ 15,833
Hull Corporation	*	...	...	...		...	...	...	...		—	—	—
Ilford U.D. Council	653	576	576	555		732	705	761	781		43	32,870	+ 3,980
Ilkeston Corporation	*	...	...	...		...	...	...	...		—	—	—
Ipswich Corporation	416	385	380	352		555	552	532	579		43	28,770	+ 7,167
Isle of Thanet	268	216	209	204		164	164	179	197		17	2,829	— 1,525
Kilmarnock Corporation	230	157	158	151		315	203	198	219		36½	7,490	+ 1,013
Lanarkshire	2,167	2,259	2,233	2,282		2,146	2,839	2,450	2,399		4	9,835	+ 894
Lancashire United	2,114	1,732	1,710	1,697		2,817	2,212	2,202	2,449		4	7,783	+ 1,846
Leeds City	9,837	9,308	9,084	9,038		10,866	10,208	10,324	11,057		43	474,997	+ 53,330
Leicester Corporation	3,266	3,259	3,190	...		3,986	3,966	4,256	...		—	—	—
Leith Corporation	*	...	...	...		...	...	...	...		—	—	—
Leyton U.D. Council	1,473	1,471	1,450	1,492		1,720	1,639	1,670	1,667		43	80,142	+ 11,034
Liverpool Corporation	14,964	14,331	13,873	13,480		16,291	15,717	15,639	16,497		3½	60,173	+ 7,060
Llandudno and Colwyn Bay	218	183	180	160		242	196	202	215		8	1,784	+ 222
London County Council	45,677	46,725	45,002	44,538		52,446	51,156	52,556	53,724		42½	2,348,767	+315,930
London General Omnibus	*	...	...	...		...	...	...	...		—	—	—
London United	*	...	...	...		...	...	...	...		—	—	—
Lowestoft Corporation	*	...	...	...		...	...	...	...		—	—	—
Maidstone Corporation	240	196	174	170		288	242	231	247		43	10,554	+ 1,227
Manchester Corporation	18,835	18,195	17,916	17,631		22,446	21,664	21,722	23,382		43	901,612	+ 95,943
Metropolitan Electric Tramways	*	...	...	...		...	...	...	...		—	—	—
National Steam Car	*	...	...	...		...	...	...	...		—	—	—
Nelson Corporation	205	194	184	188		228	211	215	244		43	10,125	+ 981
Newcastle-on-Tyne Corporation	6,547	6,546	6,643	6,711		8,149	7,371	7,427	8,312		43	338,983	+ 49,820
Newport (Mon.) Corporation	*	...	...	...		...	...	...	...		—	—	—
New St. Helens and District	1,119	986	960	946		1,256	1,111	1,118	1,222		30	42,116	+ 9,637
Northampton Corporation	789	721	690	662		861	812	757	879		43	36,206	+ 5,130
Nottingham Corporation	3,782	3,774	3,692	3,613		4,602	4,489	4,526	5,061		43	192,016	+ 24,389
Oldham Corporation	2,409	2,199	2,192	2,081		2,802	2,544	2,615	2,913		44	124,010	+ 16,910
Portsmouth Corporation	2,479	2,141	2,053	1,827		2,472	2,421	2,458	2,634		—	—	—
Preston Corporation	*	...	...	...		...	...	...	...		—	—	—
Provincial	2,136	1,932	1,880	1,750		2,386	2,238	2,265	2,479		16½	39,274	+ 5,569
Reading Corporation	878	841	851	773		1,049	1,043	1,026	1,140		43	45,531	+ 8,567
Rhondda Tramways	1,279	1,342	1,325	...		1,554	1,396	1,331	...		3	3,367	+ 140
Rochdale Corporation	*	...	...	...		...	...	...	...		—	—	—
Rotherham Corporation	1,596	1,573	1,601	1,577		1,854	1,794	1,872	2,055		44½	79,531	+ 11,331
Salford Corporation	5,487	5,209	5,165	5,028		6,417	6,105	6,490	6,947		43½	286,678	+ 52,190
Sheffield Corporation	10,900	10,445	10,558	10,560		12,314	11,946	12,081	13,167		44	532,697	+ 67,309
Southampton Corporation	1,675	1,606	1,548	1,487		2,113	2,043	2,089	2,239		41½	88,235	+ 16,551
Southend-on-Sea Corporation	674	623	594	585		619	534	630	657		43	38,219	+ 1,017
South Metropolitan Tramways	*	...	...	...		...	...	...	...		—	—	—
South Shields Corporation	859	810	792	...		1,072	962	953	...		42	40,346	+ 4,837
Sunderland Corporation	1,712	1,571	1,558	1,558		2,056	1,770	1,875	2,113		43	79,844	+ 8,288
Sunderland District	641	762	...	...		943	726	...	...		10	4,382	+ 806
Swindon Corporation	216	195	188	196		283	262	269	284		42½	11,636	+ 2,801
Torquay Tramways	564	513	482	...		663	614	588	...		3	1,500	+ 247
Tramways (M.E.T.) Omnibus Co.	*	...	...	...		...	...	...	...		—	—	—
Tyneside Tramways and Tramroads	628	585	576	588		892	719	705	730		4	2,426	+ 393
Wallasey Corporation	1,299	1,203	1,150	1,109		1,476	1,368	1,350	1,445		43½	67,670	+ 8,829
Walsall Corporation	820	727	543	701		1,027	983	1,016	1,076		43	42,931	+ 7,494
Walthamstow U.D. Council	989	929	909	881		1,078	1,042	1,108	1,188		43	52,651	+ 6,177
Warrington Corporation	551	506	497	...		733	709	709	...		42	24,508	+ 3,477
West Ham Corporation	3,085	2,977	2,940	3,121		3,412	3,300	3,472	3,769		42½	156,515	+ 19,046
Wigan Corporation	1,889	1,634	1,608	1,635		2,357	2,010	1,998	2,230		43	87,240	+ 14,483
Wolverhampton Corporation	*	...	...	...		...	...	...	...		—	—	—
Yorkshire (West Riding)	1,835	1,741	1,726	1,744		2,288	2,093	2,125	2,410		4	8,917	+ 1,871

* TRAFFIC RETURNS SUSPENDED.

Owing to the European war, the Government have taken over the railways of Great Britain as from August 4, 1914, and the issue of traffic returns has been suspended. Consequently the traffic returns of the electric railways which usually appear on this page cannot be given.

The Publication of the Traffic Returns of the Tramways marked with an asterisk in the above table have also been suspended during the war.

TRAMWAY DIRECTORIES.

A useful feature of this issue is the directory of electric railways and electric tramways which will be found among the advertising pages. This directory contains the names of the chief officials and the principal particulars relating to each undertaking.

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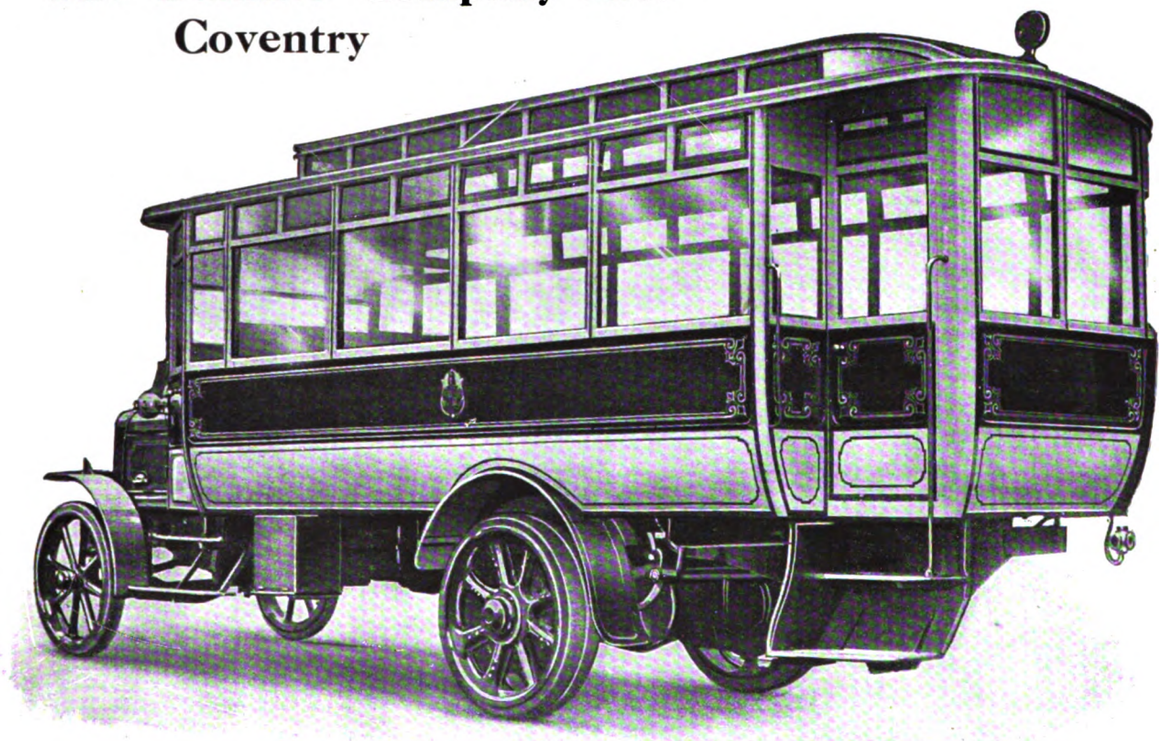

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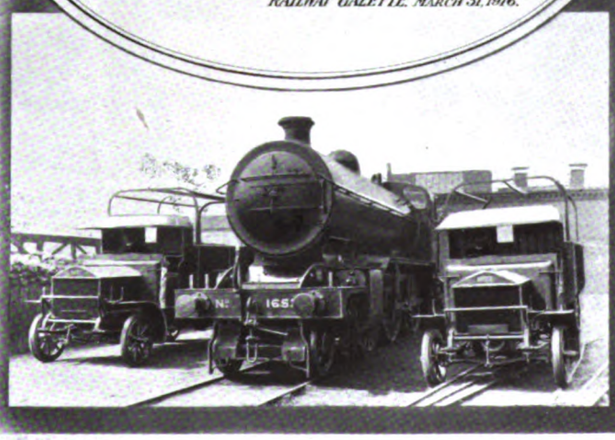
RAILWAY GAZETTE, MARCH 31, 1916.

IN PEACE

USED BY THE LARGEST CARRYING COMPANIES AND COMMERCIAL HOUSES.

IN WAR

USED BY THE BRITISH AND ALLIED GOVERNMENTS.



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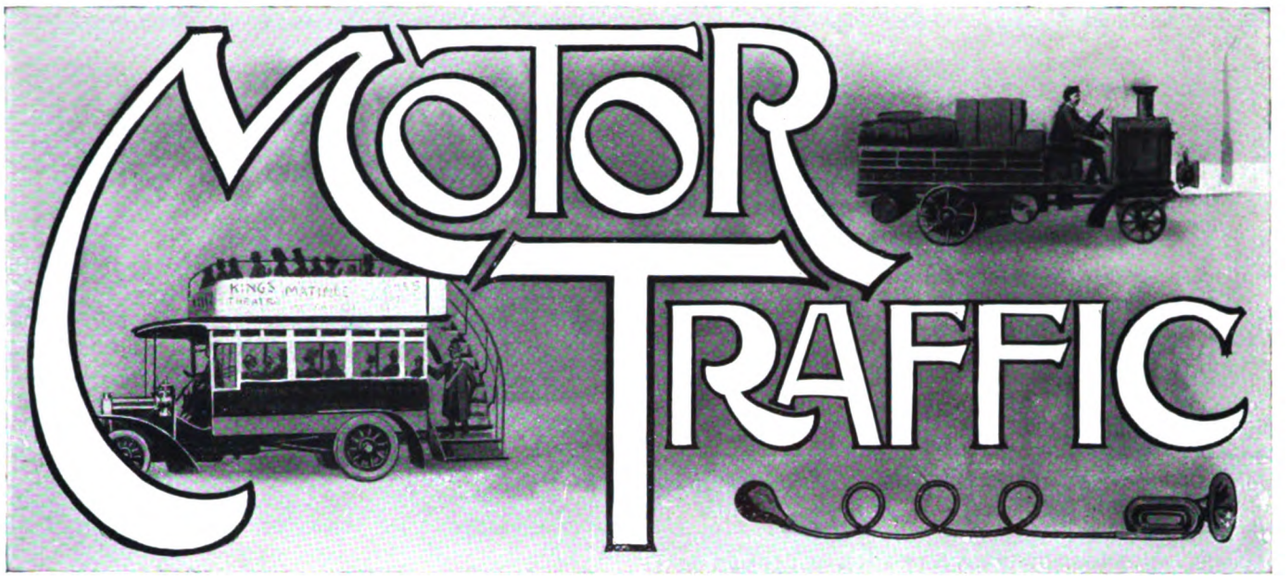

The latest motor fuel restriction order is apt to give a first impression to the effect that it is calculated to curtail the use of coal gas. It is most improbable, however, that this is its real meaning. In fact, one is inclined to anticipate that it will be followed in due course by further and ever more drastic restrictions in the use of petrol, such as will practically compel the fitting of coal gas equipment. The petrol shortage appears to be getting worse, and there are various good reasons why the depleted stocks are not likely to be replenished during the next few weeks. Meanwhile coal gas equipment manufacturers are busy organising their industry with a view to standardisation of the quality and price of gas bags. In order to co-operate to better advantage, they have formed an Association of their own that ought to be able to do good work. A number of interesting experiments are being made in the use of gas under high pressure, and one gathers that there is also a tendency towards the use of moderate pressures of, say, 6 or 7 atmospheres. In this connection semi-rigid containers constructed of rubber and fabric can be successfully employed.

* * * * * *

The publication of the report of the Coal Conservation Sub-Committee opens up a number of interesting possibilities in connection with the use of motor vehicles. Incidentally, if this big scheme of producing and distributing electric current can be adopted, manufacturing costs should be decreased. Another point is that the scheme involves the utilisation of all the valuable by-products of coal. These include a considerable quantity of liquid motor fuel. If this is produced on a large scale at only a few points, and in connection with an organisation which covers the whole country, then we ought to get something nearly approaching a standard quality of home-produced fuel, and also a substantially increased supply available everywhere at a reasonable price. The most direct connection between the proposals under discussion and the motor movement are, however, concerned with the electric vehicle. Any scheme which is calculated to make electric current available everywhere at a universally low price must have a great influence on this development. At the present moment the price of current for vehicle batteries varies greatly. There is reason to think that at some points it is artificially low, representing a loss to the suppliers incurred with a view to stimulating a movement that may ultimately become profitable. A very large percentage of the principle users of electric vehicles are local authorities who can take their fuel at cost price. The ordinary commercial user has no such advantage. The price to him varies from point to point over a considerable range. He also has to face the uncertainty of being able to get current just where and when he requires it. A national system of electric supply distribution would dispose permanently of one of the principle reasons why the electric vehicle is not more freely adopted. Of course, at the present moment its extended use is prevented by the restrictions on manufacture and import, and particularly by the shortage of batteries and of materials with which to execute repairs and renewals.

* * * * * *

A measure which, if it becomes law, may have important influence on the motor industry during the period of reconstruction is the Imports and Exports Temporary Control Bill. So far as it concerns us here, the object of this Bill is to enable the Government to regulate imports for a time after the war, so as to give first consideration to the replenishment of our supplies of food and raw materials. The requirements of the motor industry under the last category will be very considerable. Anything in the nature of a shortage would delay the fulfilment of the manufacturers' plans for after-war production. Upon the prompt execution of these plans depends the ability of the industry to absorb the workers released from the army with sufficient rapidity. Similar conditions obtain in other industries ; and it is clear that the Government must have power to bring in a plentiful supply of raw material, and for the time being to restrict the import of manufactured and other articles, which might otherwise prove more profitable cargoes and therefore be accorded precedence by ship owners. The Bill under consideration will thus have two effects upon the motor industry. It will, as explained, help to provide the necessary raw materials for manufacture, and it will also be likely to involve a temporary partial or complete freedom from the competition of foreign manufacturers, who will probably not be allowed to import complete vehicles until the needs of our own shops have been fairly well filled. Thus the Bill is calculated to reduce the handicap under which the British industry would otherwise labour. The general principle underlying it has met with a fairly general agreement, but the period of its operation, originally set down as three years, will probably be reduced when the measure comes before the House of Commons.

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MOTOR TRAFFIC.

It seems probable that we are rapidly nearing the time when the motor industry will adopt a very practical and valuable form of co-operation. There are grave difficulties in the way of co-operative manufacture or co-operative selling, but these difficulties do not apply to co-operative research. In this last direction the way is being made easy by the very generous outlook adopted by the Government through the Research Department. This department has at its disposal a considerable fund for the assistance of industries which may decide to inaugurate important researches. When such industries form research associations on approved lines the Government supplements the funds subscribed by manufacturers, adding an almost, if not quite, equal sum. This arrangement continues for a period of four or five years, after which it is expected that the industry itself will be prepared to continue the work without assistance, having had ample opportunity of testing its value. Another important point is that the subscriptions of manufacturers to a Research Association are payable out of income. At the present moment the great majority of firms in the motor industry are making what are officially regarded as excess profits. Consequently 80 per cent. of the subscription to a Research Association would, if it did not go to such an association, go to the collectors of taxes. If a manufacturer subscribes £100 for research work, about £20 comes out of his own pocket and the other £80 is lost to the Treasury. If, for his £100, the Government put up another £100, it is apparent that for the time being the manufacturer is only required to pay about 10 per cent. of the cost of his joint research. The Government must indeed be impressed with the value of such work to offer such generous contributions.

* * * * * *

As regards the field for research, there can be no two opinions as to whether or no there is plenty of work to be done. Investigations of matters of detail can be carried on by individual concerns, but there are many broad principles on which much additional light could be thrown with great advantage. We really know comparatively little as yet about the best ways of utilising fuels of a cheaper and heavier order than petrol. Our knowledge as to the degree to which aluminium can be advantageously used in the construction of an engine is in its infancy. Both the materials and design of springs need investigation. We cannot yet claim that the suspension of motor vehicles is ideal. Allied with this question is that of tire wear. Do we know as much as we should as to the causes which affect this? Then, again, no one will deny that there is room for a prolonged investigation into the qualities of special steels with a view to their proper application in motor design. There are many other fields in which research is desirable, but the few examples given will serve to show not only that there is plenty to be done, but that much of what needs doing is so wide in scope that the individual manufacturer can hardly be expected to undertake it. Moreover, it is in the interests of the users of motor vehicles that when money is spent upon research the results should be available to the whole manufacturing industry, so that users in general may benefit by the improved knowledge obtained. In this way progress is secured without so high an expenditure in each case as to necessitate any material increase in the price of the vehicles.

CONTROL OF ROAD TRANSPORT.

A Board to be Constituted.

It was officially announced on January 31 that the President of the Board of Trade, with the concurrence of the War Cabinet, has decided to appoint a Road Transport Board to co-ordinate the work of the existing Government departments in connection with road transport; to determine what further measures are necessary to ensure the most economic use of road transport vehicles, and their efficient allocation for meeting such requirements as may arise from time to time for the transport of food, munitions, and other war material, and for the essential needs of the trade and industry of the country; and, subject to the direction of the Board of Trade, to give executive effect thereto.

The Board will consist of representatives of each of the following departments:—

Board of Trade (Petrol Control Department).
Board of Trade (Horse Transport Department).
Ministry of Munitions.
Ministry of Food.
War Office.
Post Office.

Constitution of the Central Board.

The Road Transport Board, when constituted, will take into consideration, among other things, the following proposals:—

(a) The registration of vehicles, whether driven by petrol, steam, gas, or electricity, or horse-drawn, in such a way that any of them could be rapidly called upon in any district should emergency arise.
(b) The preparation of a priority scheme for the use of such vehicles in emergency.
(c) The preparation and putting into force of local schemes for co-ordination and economy in the use of horse and mechanical transport by traders, Government departments, and others, whether by voluntary action or, if necessary, by compulsion, having regard to the necessity of not unduly interfering with any essential trade or industry.
(d) The regulation of rates of hire for horses and vehicles (so far as not already regulated by any public authority).

Horses and vehicles used mainly or entirely for agricultural purposes are excluded from (c) and (d) above.

Divisional Boards.

It is further proposed that the Board shall exercise its executive functions through Divisional Road Transport Boards set up in each of the 15 divisional areas of the Food Commissioners, consisting in each case of:—

Road transport officer (appointed by the Board of Trade).
The divisional food commissioner of the Ministry of Food or his representative.
The local transport officer of the Ministry of Munitions or his representative, with
Two representatives of local interests.
The chairman to be the road transport officer.

Sub-committees will be appointed by the Divisional Boards to deal with sub-areas of their divisions. General instructions for the guidance of the Divisional Road Transport Boards will be drawn up by the Central Board.

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MOTOR TRAFFIC.

SOUTHAMPTON TRAMWAYS TOWER WAGON.

EDISON BATTERY EQUIPMENT.

By the courtesy of Mr. W. T. Robson, general manager and engineer of Southampton Corporation Tramways, we are enabled to give some particulars of the tower wagon which is illustrated in the accompanying view. The wagon was first put into use in December, 1915, and has since run continuously. The chassis is of the Edison 1-ton G.M. type, equipped with 66 Edison A6 cells. The original equipment was a 1-ton 70-volt motor, and was supposed to give a speed of 12 miles per hour, a pedal switch operating a shunt increasing this to 14 or 15 miles per hour. It was soon found, however, that the vehicle was under-powered, the falling off in speed on the slightest gradient being very noticeable, and as a matter of fact nothing like the speed specified was obtained unless the battery was fully charged and well warmed. The effect of the additional shunting of the field was to cause undue heating, and armature troubles naturally developed. Experiments were therefore made with a larger motor, and the vehicle is now equipped with a 2-ton type 60-volt motor, that has given exceedingly satisfactory results. A good speed is maintained on gradients, and the falling off in speed with a partially discharged battery is not nearly so noticeable. The increase in consumption is negligible owing to the fact that with the smaller motor the battery had to be constantly boosted to maintain a sufficient speed for the work required.

The speeds now obtained are as follows, the figures being recorded in running over a measured mile of level road :—

Battery half discharged	12	miles per hour
Battery fully charged	15	,, ,,

The appended figures, which Mr. Robson presented to the committee after the vehicle had been in use for one year, show the maintenance cost. The second year's running cost is no higher.

Miles run	6,639		
Units used :—7,491 at 1d. plus 10 per cent. ...	£34	6	8
Cleaning and greasing	5	19	7
Battery maintenance	2	6	4
Stores	0	19	2
Proportion of cost of renewing tires next year	16	0	0
Total	£59	11	9

The outstanding features are :—(1) The extraordinary low maintenance cost, and (2) the main expenditure (electricity) has been kept entirely within the Corporation.

The two vehicles which this vehicle displaced cost together with attendance approximately £172 per year, so that a considerable saving has resulted in addition to the advantage of being able to do much more work in the same time, and a great saving of time in arriving at the scene of breakdown. The vehicle has always been instantly ready for duty, and the stables have been converted into an exceedingly useful stores.

At the present time one is, of course, devoutly thankful to be undisturbed by petrol restrictions, and the policy adopted of purchasing an electric vehicle has been thoroughly justified.

Under the present conditions with the larger motor, it is, in Mr. Robson's opinion, difficult to imagine a more economical and thoroughly satisfactory tower wagon either for emergency use or general maintenance work.

The total mileage run to date is 13,500, and the original tires were renewed three months since. The electrolyte was renewed in August last, and the driving chains have been replaced by new ones. This represents the total amount of repair work done, the only other expense being ordinary greasing and cleaning, which, as will be seen from the above figures, is exceedingly small.

One of the most important features is the presence of a constant supply of a good bright light, even though

Edison Tower Wagon—Southampton Tramways.

the current may be off the line, an invaluable assistance in the case of serious breakdown. The only addition to the vehicle since the photograph was taken is the provision of a glass wind screen in front of the driver.

SCOTTISH MOTOR TRACTION COMPANY.

In their report for the year ended September 30 last, the directors state that the net profit amounts to £8,560, to which has to be added £2,142 brought forward. Due allowance has been made for depreciation, and £4,000 has been transferred to the reserve fund. The board recommend a dividend for the year at 7½ per cent., free of income tax, carrying forward £3,308. Traffic has been well maintained during the year, but the operating expenses have been heavy owing to increased wages and cost of material, and the high price of petrol. During recent months gas has been largely used as the motive power. It is impossible to say what saving will thus be effected, as although there will be a reduction in the cost of fuel, the upkeep of the containers is somewhat heavy.

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MOTOR TRAFFIC.

NECESSARY EXPENDITURE ON ROADS.

EXTRA OUTLAY OF £30,000,000.

SIR GEORGE GIBB'S MEMORANDUM FOR THE RECONSTRUCTION COMMITTEE.

Included in the seventh annual report of the Road Board, which was issued towards the end of last year, is a memorandum, prepared at the request of the Reconstruction Committee, on the subject of works of road construction and improvement available for execution after the war. The document, which is signed by Sir George Gibb, chairman of the Board, deals only with England and Wales. It states that the works of road construction and improvement which are required and, if funds were forthcoming, might be available for execution after the war, may be divided into four classes :—

(1) Works of (*a*) strengthening and resurfacing, and (*b*) drainage, reconstruction, and resurfacing, which are of first importance, and should be proceeded with as soon as finance, labour, and materials can be provided.

(2) Works of road widening and new construction which have been approved, but the execution of which was postponed owing to the war.

(3) Reconstruction of bridges on important roads which are unable to support heavy motor traffic, including bridges owned by railway and canal companies.

(4) Schemes for the construction of new roads and bridges, widenings in urban areas involving the purchase of buildings, and widenings and improvements of important country roads involving the purchase of property. These schemes represent desirable improvements, but their value in relation to their cost can only be determined by investigation of each scheme by the local authorities in conjunction with the Road Board.

IMPORTANT ROADS TOO WEAK FOR MODERN TRAFFIC.

The most urgent need is the reconstruction of important roads which are too weak to carry modern traffic. The urgency of this reconstruction is two-fold—(1) to provide for the traffic of heavy motor vehicles, which is expected to expand rapidly after the conclusion of the war, and, if not provided for in advance, will cause serious deterioration of roads and consequential damage and expenditure ; and (2) experience has shown that it is less costly to highway authorities, in the long run, to construct roads of a type suitable for the traffic.

The total mileage of roads in England and Wales is 152,000. It may be assumed that 10 per cent. of the total, or about 15,000 miles, stand in need, more or less urgent, of reconstruction or strengthening, as distinguished from resurfacing in the course of ordinary maintenance, in order to enable the roads to carry the growing motor traffic. The cost of reconstruction may be estimated at from £1,000 to £4,000 per mile, or at an average of £2,000 per mile. The total cost of dealing with 15,000 miles may be estimated at approximately £30,000,000 over and above the normal expenditure of the local authorities on current and deferred maintenance.

The annual expenditure of highway authorities in England and Wales on maintenance and improvements, including loan charges, is about £16,000,000. This is provided out of the rates, with some assistance from the Exchequer Contribution Account There is no practical prospect of these authorities providing, without express statutory direction or considerable financial assistance from central funds, the capital sum which is necessary to reconstruct the more important roads.

THE REVENUE OF THE ROAD BOARD.

Apart from rates and Imperial subventions, the only revenue available for road purposes is the Road Improvement Fund. The income of this fund for the financial year ended March 31, 1915, was £1,621,000. Of this sum, £898,000 were the proceeds of the motor spirit duties, £630,500 from carriage licences, and £92,500 from interest on investments. The revenue from the motor spirit duties and carriage licences has since August, 1916, been diverted to the Exchequer. The proceeds of the motor spirit duties were the result of a tax of 3d. per gallon on petrol used in private cars and 1½d. per gallon on petrol used in commercial and public service vehicles. Since that date the duties and licence charges on petrol used in private cars have been increased to 1s. per gallon, and in commercial and public service vehicles to 3d. per gallon. The proceeds of these increased duties are not known to the Road Board. The restoration of the proceeds of the duties, either on the old or an enlarged scale, to the Road Improvement Fund would enable the Board to make some contribution to the £30,000,000 required, but such contribution would represent but a small proportion of the total.

Shortly before the outbreak of war proposals were under consideration by the Government for the classification of the roads and a revision of the Exchequer grants to local authorities in respect of their expenditure on various semi-national services, including roads. The Road Board had undertaken to classify the roads in England and Wales, as such classification was essential to a sound scheme of State aid, and to any general scheme of reconstruction. The classification was nearing completion on the outbreak of war, when the work was suspended.

In Class II. the estimated cost in England and Wales of works that have been made the subject of an application to the Board is £1,314,152. The cost of works in this class which may have to be taken in hand at some time or other would probably not be less than £5,000,000.

RESULT OF DECISION ON RAILWAY BRIDGE MAINTENANCE.

There are a very large number of bridges in all parts of the country which require reconstruction. The Middlesex highway authorities, for example, have made an application to the Road Board for grants towards the reconstruction or widening of 22 bridges, the cost of which is estimated at upwards of £150,000. In every county there are a large number of bridges vested in highway authorities or owned by railway and canal companies which are scheduled as capable of carrying vehicles of only a limited tonnage, with the result that a very large mileage of important roads is closed to traction engines and heavy motors until such time as the bridges can be reconstructed. A recent decision of the House of Lords will have the practical effect of throwing in most cases upon highway authorities the cost of the reconstruction of weak bridges carrying public roads over railways and canals. It may be roughly estimated that the expenditure necessary to reconstruct bridges on important roads so as to support the motor traffic legalised by Parliament will not be less than £7,000,000. This is a very conservative estimate.

The memorandum concludes with a reference to suggestions put forward for schemes for the construction of new roads and various improvements, but the consideration of which has not been entered upon in detail in the absence of any prospect of financing them whilst the more urgent work of road crust improvement was in progress.

NEW OMNIBUS ROUTES.

The South Wales Motor Transport Company having notified Swansea Council of their intention to start a new omnibus service between Swansea and two outlying districts, the borough surveyor has reported on the position of the company under the Local Government (Emergency Provisions) Act, 1916, requiring the consent of the highway authority. The chairman and vice-chairman of the Highways Committee and the town clerk have been deputed to confer with the company with a view to arriving at an arrangement.

The Executive Committee of the County Councils Association have adopted the following resolution :—"That this Council is of the opinion that, having regard to the great cost of keeping up the county roads in a fit state for the motor omnibus traffic recently introduced for the profit of the owning companies and authorities, legislation should be introduced by the Government for payment of a fair mileage rate by the owners of such vehicles to the highway authorities."

MANCHESTER TRANSPORT SCHEME.

The following interesting reference to the organisation of commercial motor traffic at Manchester is from the annual report of the Manchester, Liverpool, and Counties Commercial Motor Users' Association :—

The Manchester Chamber of Commerce organised a traffic department, in conjunction with the Ministry of Munitions, with a view to putting the traffic of the district on a better footing by means of arranging to avoid lorries running light. Your Association was asked to give its full sanction and whole-hearted support to the scheme. It undertook to do so on being assured, first, that the Chamber would consider the formation of this department as a war measure only, and, second, that all motor owners should enjoy equal rights and be charged equal rates of commission, whether members of the Chamber or otherwise.

U.S.A. INDUSTRIAL VEHICLE EXPORTS.—During the nine months ended September last, the shipment of industrial motor vehicles from the United States totalled 10,603 machines, valued at £5,317,260, as against 14,773 and £8,074,200 respectively in the first nine months of 1916. Great Britain was the largest purchaser with 5,820 vehicles, France received 1,986, Russia 660, Canada 616, and "other countries" 1,581.

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DUNLOP NEW SOLID TIRE.

In his speech from the chair at the annual meeting of the Dunlop Rubber Company, on January 29, Sir Arthur du Cros, M.P., stated that in the solid tire business, from which they expected so much in the future, they had increased the output during the year by 66 per cent., and the quality and general results left little to be desired. They were about to produce a new solid tire which had been fully tested, and from which they expected even better results. More than half of their solid tires were now being made at the Fort Dunlop Works at Bromford, and if the difficulties of housing and transporting their workpeople could be overcome, it would be possible, with a very small addition to the plant, to more than double the present output. He had little hope, however, that that could be done in the present state of things. The rubber estates appeared in the balance sheet at £633,225, an increase of £36,000. The figure represented the money provided for those properties, but was considerably less than the amount actually expended, which, at August 31 last, was £940,000. They possessed nearly 65,000 acres of rubber-growing land, of which, at the end of December, nearly 26,000 acres had been planted with the expectation of bringing the acreage up to 35,000 during the current year. None of the profits of the rubber estates had been brought into the accounts, although the payment of a dividend by the estates would have been legitimate. The company's policy with regard to rubber growing had been an unqualified success. The results would enable them to meet competition. Their production of finished cloth had approached 6,000,000 lb. per annum. That was less than they consumed, but the benefits derived were surprising. If they had been obliged to buy on the open market, at current prices, they would have had to pay £500,000 more than they had paid to the Dunlop Rubber Cotton Mills. The Government got the benefit of that saving, because if the company had had to pay that extra amount, they would have had to enhance the cost of tires proportionately.

WAYSIDE SUPPLIES FOR MOTORS.

At a meeting of the Executive Council of the County Councils Association on January 23, the Parliamentary and Highways Committee reported having considered the following resolution received from the County Surveyors Society: —

"That it is desirable that reasonable facilities should be given for supplying gas, water, electric current, and petrol to motor vehicles, provided the existing laws be not infringed; and, further, that in the event of any new legislation being passed on the subject the interests of highway authorities should be properly protected."

Mr. H. T. Wakelam (Middlesex) reported that he was appointed by the County Surveyors Society and the Institution of Municipal and County Engineers to give evidence on this matter before the Gas Traction Committee set up by the Local Government Board. He also read to the committee draft clauses which he had prepared for the protection of the interests of highway authorities, with a view to their insertion in any new legislation.

On the suggestion of the committee, the Council decided: —

"That the resolution passed by the County Surveyors Society be approved, and that Mr. H. T. Wakelam be authorised to represent this Association, as well as the other bodies mentioned, in giving evidence on the general principle embodied in the resolution.

"That clauses for the protection of highway authorities be prepared and submitted to the Local Government Board in due course.

"That the following sub-committee be appointed to consider the preparation of such clauses, viz.: —The chairman of the Executive Council, the chairman and vice-chairman of the Parliamentary and Highways Committee, Messrs. J. Aspell, J. W. Willis Bund, F. Dent, H H. Copnall, H. A. Millington, and H. T. Wakelam."

A REAL "ROUGH-GROUND" TEST.

In testing vehicles intended for war service, trials over ordinary roads would not, of course, be sufficiently conclusive. Therefore, a test over rough ground is essential before a lorry can be officially accepted as being fit to cope with such physical conditions as must commonly be encountered in any of the active fighting areas. To reproduce those conditions exactly at home would not be easy, but a sufficiently near approach to them may be attained by a run over a stretch of broken agricultural land. The photograph shows a Napier lorry weighing, with its load, about eight tons, which has just emerged triumphantly from this ordeal, to the nature of which the farm tractor, at work in the same field, may afford some testimony.

A Napier Lorry on Test and Farm Tractor at Work—in the Same Field.

C.A.V. Running Instructions.—An indication of the extent of the business of C. A. Vandervell and Company in dynamo lighting equipments, etc., for motor cars and marine work is afforded by the recent issue from Worple Way, Acton Vale, W., of the running instructions translated into Russian. The firm's machines and equipments are to be found in many foreign countries, apart from their position as contractors to the Allied Governments, and publications in various languages are being prepared. This particular issue comprises 36 pages, including several illustrations and it was prepared at the request of the Russian Government.

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MOTOR TRAFFIC.

TRACTION ON BAD ROADS OR LAND.

A very comprehensive paper on this subject has been read by Mr. L. A. Legros before the Institution of Mechanical Engineers. The paper is so lengthy and the illustrations accompanying it so numerous that we can here only very briefly review its contents. Mr. Legros divides his subject into two parts. That is to say, he puts forward two broad types of vehicle as being specially adapted to meet the conditions which he is considering. Of these, one is the four-wheel driven truck or tractor and the other comprises all those machines which utilise the principle of the chain track.

In many respects a four-wheel driven machine is similar mechanically to the more common types, but it differs in certain essentials. It enables the whole of the weight to be used to assist adhesion and it at least suggests the adoption of four-wheel steering and the application of brakes to all four wheels. As regards four-wheel steering, this evidently admits of turning in a smaller radius but introduces difficulties in towns. Particularly the four-wheel steered vehicle, when close to the curb, will want to mount the pavement when an effort is made to bring it out to the crown of the road. Also the body must be so shaped as to allow of the lock of the rear wheels, which means that it must be unusually narrow. The whole question of four-wheel brakes is fully dealt with by Mr. Legros, the practical advantages and disadvantages being explained. Then follows a discussion on the subject of differentials. The four-wheel drive involves three differential gears, one on each axle and one centrally placed. The result is that either a differential locking gear must be provided, or else the differential gears themselves must be of the worm type, so as to be irreversible. After describing the various four-wheel driven tractors on the market, Mr. Legros states his conclusion that this type has great advantages over the ordinary two-wheel driven tractor when used on hard but bad roads with gradients up to one in five, or on soft tracks such that the tires sink in two or three inches and having gradients up to one to fifteen. He expects the four-wheel drive to rank as an important factor in the development of districts overseas not far removed from the railway but having only primitive roads.

He then turns to chain-track machines, referring briefly at first to heavy transport girdles and to the Pedrail. He then analyses the different systems of chain-track propulsion, the methods adopted for carrying and distributing the weight, and the various systems of suspension employed. Next he deals with methods of steering and of driving. He then discusses the design of the tracks themselves, and the causes of wear and tear. Afterwards he passes on to the track-shoes and other details of the mechanism. Subsequently he deals with climbing power and draw-bar pull and connections. It appears that the power delivered at the track is about 70 per cent. of the engine power in large tractors and about 55 per cent. in small tractors. The force required to haul the track itself varies from 2 to 15 per cent. in different systems. The draw-bar pull varies from 30 to 70 per cent. of the tractor weight. The machine can climb very steep gradients. It is pointed out that the resistance to traction is not greatly increased by conditions under which a wheeled vehicle sinks in so deeply that the tractive effort required to haul it might amount to 40 per cent. of its weight. Consequently swamp or sand such that no horse or wheeled tractor can haul a load through it at all will present no difficulty to the chain-track machine. Wherever a track can be found 7 ft. wide, that does not present rocky obstacles over 10 in. high—whether the surface be sand, ash, marsh, snow, or ice—on the level or on gradients up to 30 per cent. the chain-track machine has proved itself capable of working. It may be expected to occupy a position of ever-increasing importance in the development of new countries, and in places where it is necessary to transport machinery and stock over country many miles from the railway.

ARMY MOTOR TRANSPORT.

An Account of its Growth during the War.

The development of the mechanical transport branch of the Army Service Corps since August, 1914, has been described in an official statement of considerable interest, but to which we have been unable to refer earlier owing to other demands on our space. Until August, 1914, mechanical transport was controlled by the Transport Branch of the War Office. It consisted of a small *personnel* and establishment of vehicles, and relied for the provision of transport necessary for the mobilisation of the Expeditionary Force partly on vehicles already in use for civil transport (whose owners had previously been in receipt of a subsidy), and partly on the impressment of other vehicles. For the expansion of its *personnel* it relied on the direct commissioning of experienced civilians for the provision of officers, and the direct enlistment of civilian drivers, in many instances the drivers of vehicles, impressed or subsidised, offering themselves for enlistment: a certain number of officers, possessing the necessary qualifications, had also been warned that their services would be required with mechanical transport on mobilisation.

The mobilisation of these units was entrusted to officers commanding depots at ports of embarkation: these officers were provided with lists of vehicles which were to mobilise at their depots, and the owners were instructed by telegraph at which depot their vehicles would be required. For the provision of spare parts a system of subsidy, similar to that for the supply of complete vehicles, existed, and efforts were made to encourage manufacturers to standardise parts and fittings to as great an extent as possible.

On the outbreak of war these methods efficiently provided the mechanical transport required by the Expeditionary Force; but clearly a system designed to supply the requirements of our military establishment before the war would need considerable revision and expansion when called upon to meet the demands of the new armies. In August, 1914, the control of the mechanical transport was removed from the Transport Branch of the War Office and entrusted to a separate branch of the Quartermaster-General's staff.

For the reception and training of *personnel* two depots have been established. Recruits, on proceeding to the training depot, receive at first 10 or 14 days' recruit training in drill at a sub-depot; they then undergo a five weeks' course of driving and technical instruction by a staff composed partly of army instructors and partly of members of the staff of the Instructional School of the London General Omnibus Company. Men who are found unsuitable for driving or fitting become loaders and packers.

Supply of Vehicles not yet Equal to the Demand.

The collection of vehicles before allotting them to units is carried out in a manner similar to the collection of men; a depot has been established near London where vehicles are received from the manufacturers, and this depot is responsible for supplying vehicles required by mobilisation depots to complete mechanical transport units for service overseas. The work of bringing the men and the vehicles together to form units is carried out at a depot about 50 miles from the port of embarkation.

During the first ten months of its existence the first-mentioned depot took delivery from manufacturers of more than 18 times as many vehicles as were raised on the original mobilisation in 1914.

Chassis from American manufacturers are received at this depot and dispatched to firms in England for the fitting of bodies; but the use of American vehicles is being restricted, owing to the delay caused by the necessity of so much handling in this country. This depot has also been responsible for the supply of a large number of vehicles to the Allies.

The co-operation of the War Department and the manufacturers has produced a very satisfactory weekly output from each manufacturer under contract; the factories are under the direct supervision of the inspectors of the War Department, who entirely control the manufacturers' output and facilitate the supply of raw materials.

By the introduction of the Military Service Acts a more efficient organisation of man-power was made possible, enabling the Government to check considerable waste of labour. The output of the British manufacturers is not yet equal to the demand.

Supply of spare parts and tires is controlled by a depot in London. There is also a depot in London for the repair of vehicles, but the work of repairing those which have become unserviceable is principally carried out in the base depots abroad.

The growth of mechanical transport since August, 1914, is illustrated by the following facts:—In October, 1916, there were 220 times as many motor vehicles (including lorries, cars, ambulances, and cycles) in possession of the mechanical transport as there were on the outbreak of war. With regard to the growth of *personnel*, in August, 1916, there were four times as many men stationed at the general depot for available trained men, and 20 times as many men serving on the Western front alone as were raised from all services for mechanical transport on mobilisation. In June, 1916, there were two and a half times as many officers serving in the mechanical transport as were serving on the peace strength of all branches of the A.S.C. in August, 1914. In October, 1916, ten times as many men were serving with the mechanical transport in France alone as there were on the total strength of the A.S.C. in August, 1914.

Withdrawal of London Omnibus 1½d. Fares.—On February 1 the London General Omnibus Company withdrew all the 1½d. fares on their vehicles with the exception of special munition workers' fares or through fares with company-owned tramways. The step is taken in order to lessen the crowding of the vehicles and to facilitate the work of the conductors.

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MOTOR TRAFFIC.

COMMERCIAL MOTORS AND THE GAS ORDER.

A deputation was recently received by the Petrol Control Department from the Commercial Motor Users' Association on the question of the Gas Restriction Order, under which it was not possible for a gas permit and a petrol licence to be granted in respect of the same commercial vehicle, except that in the case of the former an emergency amount of petrol not exceeding four gallons would be granted. The Association pointed out that if it were intended to bring about a diminution in the use of petrol by imposing such a condition, such would not be the case; the result in practice would be to increase and not to decrease the amount of petrol used. Many commercial motor owners had converted their vehicles to use gas in order to take the utmost advantage of their motor transport, of which there was such a scarcity, and they would only utilise the small quantity of petrol allowed them when it was not possible to refill the gas containers and on hills, where the use of gas was in many instances unsatisfactory. The Association urged that a more liberal allowance of petrol than that permitted should be granted to users of gas. The authorities promised to reconsider the matter.

On January 26 the Petrol Controller, Sir Evan Jones, Bart., informed the Association that he will concede any necessary increase in the monthly ration of petrol for commercial motor vehicles and public service vehicles which are equipped to run on gas. This decision will greatly facilitate the extended adoption of gas for traction purposes wherever supplies can be obtained without detriment to consumption for necessary domestic and munition purposes. Applications for gas permits should be addressed to the Petrol Control Department, 19, Berkeley Street, London, W.

MUNICIPAL ELECTRIC WAGONS.

COMPARATIVE REPORTS FROM SIX COUNCILS.

Weymouth Corporation have received the appended returns obtained by the Streets and Works Committee to enable them to determine whether to purchase a battery-driven wagon. In each case the return shows a saving per ton carted as compared with horse haulage:—

NAME OF TOWN.	SOUTH SHIELDS.	IPSWICH.	LEYTON.	DOVER	ILFORD.	CHESTER.
Type of vehicle	Edison	Ransome	Edison	Edison	Edison	Edison
Type of battery	Edison	Ironclad Exide	Edison	Edison	Edison	Edison
Number of vehicles in use of all makes	2	1	1	6	1	2
Cost of vehicle	£1,000	£958 10s. 0d.	£1,075	£1,126	£1,240	£1,000
Capacity of vehicle in tons and cubic yards	2½ tons 168 cubic ft.	3 tons	2 tons	2 tons 6 cubic yards	4 tons	2 tons 5½ cubic yards
Class of work principally used for	Removal night soil	General haulage	House refuse	House refuse	Carting coal	House refuse and coal
Minimum length of journey ...	1 mile	1 mile	8 miles per day	Average 4 miles	Average ¾ mile	1¼ miles
Maximum length of journey ...	4¼ miles	6 miles	13 miles per day			3 miles
Cost per ton mile as compared with horse haulage	Horse 4 5½, electric 2 9	Horse 1 9-2 –, electric 1 1½	Probably 2d. per mile cheaper	1 8 against 2 9½	Elec. 9½d., horse (by contract) 1 2	...
Type of tipping gear	Electric motor	Hand operated	Elec. automatic	Automatic	Edison	Electric
Is tipping gear satisfactory ...	Yes	No, there are better gears on market	Yes	Yes	Yes	Yes
Cost per unit for charging batteries	1¾d.	1½d.	1½d.	1½d. plus 20%	1d.	1d. plus 15%
Whilst charging batteries, is it necessary to have man in attendance, and is a charge made for this man's services apart from ordinary charge per unit	No	Yes, total charge 10 6 per week	Van driver is present	No	No	No
Annual cost of running vehicle, including all charges and depreciation, etc.	3/– per ton, exclusive of capital charges	£397	Not yet ascertained	£135 each vehicle	...	...
Speed of vehicle (miles per hour)	10	8 -10	10	12	8	12
Mileage of vehicle on charge on level roads	...	35	40 (estimated)	40	...	40
Is charge made for garaging vehicle by Electricity Committee? If so, what amount	No	...	No, own garage	No	...	No
Wages paid to driver	5/4 per shift, 11/– war bonus	6d. per hour plus 10/– war bonus, and 6d. for each child under 14	40/–	28/–	...	Disabled soldier 6d. per hour
Number of helpers to each vehicle and wages	2 at 5/3 and 11/– war bonus	Driver and 1 man	2 at 36/–	2 at 27/–, 1 at 14/–	1	4
Do you consider electric vehicles more satisfactory and economical for short journey work (say about one mile) than horses	Yes	Believes where journey less than 2½ to 3 miles advantage lies with horse haulage	Yes	Yes, on full day's work, provided vehicle loaded expeditiously	Yes, very much	Yes
Estimated number of horses replaced by electric vehicles	6	3	2½	3	4	3

A WARNING TO OMNIBUS DRIVERS.—The manager of the Midland Omnibus Company has reported as follows regarding an accident to one of the company's omnibuses, which ran over a bank and narrowly escaped being overturned:—"The cause of the accident was not due to any mechanical failure, the steering and gearing being perfect, but to an infringement of standing orders by the driver. He failed in attempting to change speed on the hill, instead of stopping at the bottom to do so, and the brakes not being promptly applied, the omnibus ran back."

FUEL FOR MUNITION MOTORISTS.—The recently formed National Motor Cyclist Fuel Union has more than 3,000 members, who are all motor cycling munition workers. The Union acts in securing fuel collectively from the Petrol Control Committee. It is estimated that if an adequate supply of petrol is granted—about half a gallon for each member per week—only about one-eighth of a single cargo per annum will be absorbed, and a speeding up of important national work will result. Hitherto munition workers have been granted petrol on their individual applications.

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MOTOR TRAFFIC.

LEGAL HINTS FOR MOTOR OWNERS.

Some remarks embodying advice on legal matters, which are of interest to owners and drivers of commercial and public passenger vehicles, were made at the recent annual meeting of the Manchester, Liverpool, and Counties Commercial Motor Users' Association, held under the presidency of Mr. Leo. Swain at Manchester. The speakers were Mr. Pratt (Messrs. Leak and Pratt) and Mr. Dean (Liverpool), two of the solicitors to the association.

Mr. Pratt first referred to the various offences which predominate in the police court summonses. First and foremost he dwelt upon the desirability of not exceeding the axle weights, as it was a most difficult matter to contest, especially where the local authorities had taken the machine to a weighbridge. The only defence, practically, was to say that one was sorry. Overloading for many reasons was a thing to be avoided. Excessive speed was another frequent cause of trouble, but during the past year there had been less interference in this direction, no doubt owing to war conditions and to the desire of the authorities to interfere as little as possible with rapid transport. One of the most frequent summonses, and yet for a most trivial offence and one which every owner could easily avoid, was that of neglect to have painted in its proper place on the vehicle the registered axle weights. He would specially call the attention of all users to the desirability of carryihg out the regulations made in connection with the running of industrial motor vehicles, as it seemed to him a pity that the authorities, in order to enforce regulations which were perfectly well known, should have, in so many instances, to issue summonses before these regulations were properly observed. Inefficient brakes were also an occasional cause of offence, and in this direction he emphasised the necessity of seeing that brakes were in thorough order, and that the necessary arrangements were made, especially with a trailer attached, for proper supervision, as it was not only desirable to avoid a summons for this offence, but the danger to the general public was vital. He strongly urged the necessity of drivers, or those stopped by the police in the course of their duty, avoiding an antagonistic or resentful attitude. Politeness to the police was always desirable, however much the individual charged might resent the interference, and it made a considerable difference in the defence of a case.

Mr. Dean mentioned that in his district, the Cheshire section, he had come across a number of cases in connection with the carrying of the red lamp at the rear of the trailer. This often consisted of an ordinary storm lamp, which was painted with red paint or some other material. Owing to the vibration and use, the colouring matter became worn, and a summons was consequently often the result, because the lamp was indistinguishable from either white or red. It was desirable, therefore, that those in charge of vehicles should see that the rear lamp carried should always comply with the Order. Industrial vehicles moved much slower than private cars, and as many of the cars now on the road were for military purposes and travelled at a high speed, it was necessary, in the interest of the avoidance of danger to others, to assure oneself that the rear lamp always showed red.

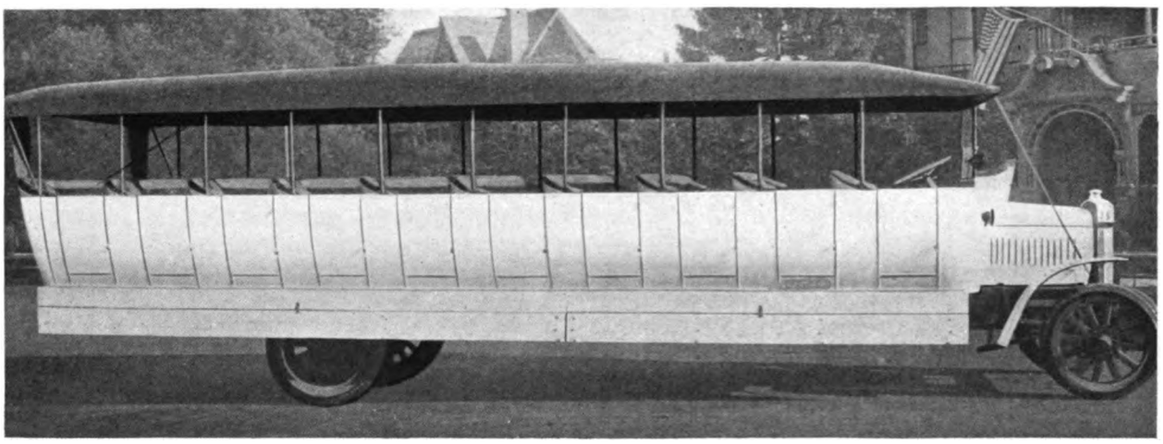
RESTRICTION ON GAS-DRIVEN VEHICLES.

New Order of the Board of Trade.

On February 5 the Board of Trade issued a supplementary announcement relating to the use of gas as fuel by motor vehicles. Its terms are as follows :—

Under the provisions of Clause (11) of the Motor Spirit (Consolidation) and Gas Restriction Order, 1918, motor vehicles fitted with gas apparatus may not be driven after February 9 next without a gas permit issued by the Petrol Controller. Forms of application for gas permits will be furnished on request by the Petrol Control Department, 19, Berkeley Street, London, W.1. If the motor vehicle was fitted with gas apparatus before January 3, 1918, or has since that date been fitted with apparatus ordered before December 21, 1917, a gas permit will be issued on application, subject to the conditions mentioned below. If, however, a motor vehicle is not at present so fitted, or if the order for the gas apparatus has been given since the intention to restrict the use of gas was announced, the application will be considered on its merits, and a gas permit will be issued only in those cases where a motor spirit licence would otherwise be granted.

A motor spirit licence and a gas permit will not be granted in respect of the same vehicle, except in the following cases :—



60-Passenger Tourist Char-a-bancs at Los Angeles, California, Reputed to be the Largest yet Built.

(This car was described in our issue of January 17, 1918.)

Owners of hire cars and taxicabs will be allowed with each gas permit granted an emergency ration of petrol, not exceeding 4 gallons per month, in those cases where the motor spirit licence is surrendered.

Owners of omnibuses will be required to give a provisional estimate of the monthly mileage run on gas and on petrol respectively, and a gas permit will be granted subject to the condition that the quantity of petrol licensed shall be reduced in accordance with the mileage run on gas.

Owners of trade vehicles who make application for a gas permit will be required provisionally to surrender one-third of their present allowance of petrol granted in respect of the vehicles for which application is made.

Owners of both omnibuses and trade vehicles will be required to furnish a monthly statement of the mileage run on gas and petrol respectively, and the reduction in the quantity of petrol licensed will be adjusted accordingly. It is not proposed to make any reduction of the existing allowance of petrol in respect of mileage run on gas before January 3, 1918.

In cases where a gas permit is granted in respect of any vehicle, and the owner possesses a stock of petrol obtained in accordance with the provisions of a motor spirit licence, such stock of petrol may be used, in addition to gas, for the purpose of driving the vehicle.

The same restrictions as to purposes of use apply equally to petrol-driven and gas-driven vehicles, but, while a motor spirit licence limits the quantity of motor spirit that may be obtained, a gas permit does not so limit the quantity of gas. The issue of a permit will not, however, give the holder a right to demand a supply of gas from any source.

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MOTOR TRAFFIC.

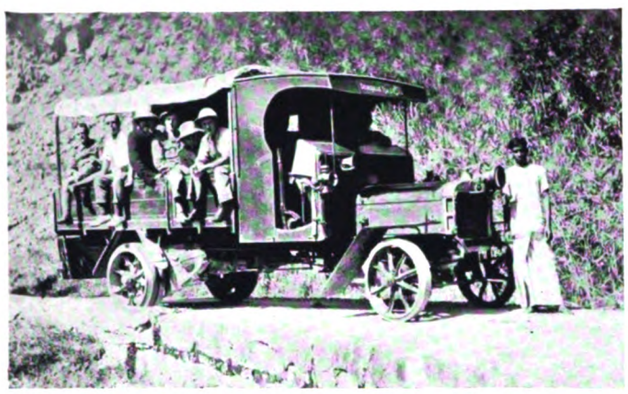
MOTOR VEHICLES FOR MUNICIPALITIES.

Salford Gas Committee are purchasing a motor car at £260.

Richmond Council have agreed to purchase a second-hand motor wagon.

Walsall Corporation have obtained a motor car for the Electricity Committee.

Plymouth Council have received tenders for the supply of a motor ambulance.



25-H.P. 2-Ton Halley Lorry with Chain Cases in Service in Ceylon.

Glossop Council have been presented with a motor ambulance by Mr. I. Jackson.

Hull Cleansing Committee have purchased two second-hand Ford vehicles for the removal of house refuse.

Bedwellty Council have applied to the Ministry of Munitions for sanction to purchase a motor fire engine.

Rochester Council have accepted the tender of Messrs. Aveling and Porter for the supply of a steam tractor.

Bradford Corporation have placed an order with the Austin Motor Company, Limited, for a tipping wagon.

Oldham Corporation have authorised the Tramways Committee to purchase an electric omnibus for service in the town.

Manchester Corporation have decided to purchase a further motor vehicle for use in the street cleansing department.

Glasgow Electricity Committee are purchasing two electric vehicles from the Scottish Wholesale Co-operative Society.

York Council have asked the Ministry of Munitions for a permit to purchase a steam wagon for the city engineer's department.

Glasgow Corporation have under consideration a report from its Farm Committee recommending the purchase of a motor tractor.

Chelmsford Council have purchased a second-hand Panhard chassis from a local firm for use as a tractor for the steam fire engine.

Sheffield Council have purchased a second-hand car fitted with a gas container for collecting and delivering milk to the municipal hospitals.

Southend Council have asked the surveyor to report upon the question of purchasing electric wagons for the cartage of coal to the electricity works.

Luton Council have accepted the tender of Dennis Brothers, Limited, for the supply of a 65-H.P. motor fire engine with escape attached, at £1,190.

Manchester Parks Committee have directed the conversion of the superintendent's car into a light lorry. A second-hand car has been obtained for the use of the superintendent.

Derbyshire County Council have purchased a light car for the surveyor, in place of a car that had been in use for seven years, which gives too low a mileage per gallon of petrol for present conditions.

Norfolk County Council have decided to adopt mechanical haulage on an extensive scale, both in the eastern and western districts. The Highways Committee have appointed a sub-committee to deal with the matter.

Selby Council have resolved to purchase a motor fire engine for the sum of £1,300, the Local Government Board having withdrawn their prohibition. When sanction was first asked for the price of the machine was only £1,100.

Plymouth Watch Committee recommend the Town Council to provide a motor car for the use of the chief constable, stating that there were times when tramway cars were not available, and motor cabs could not be hired. By 39 votes to 14 the Council rejected the proposal.

Workington Council have agreed to purchase a 3-ton steam tractor for general work, and a 30-cwt. second-hand lorry for the gas and water departments. The decision was come to after consideration of a report from a committee who had visited Bradford, Leeds, and Sheffield, to inspect similar vehicles under working conditions.

Dartford Council have been informed by the Local Government Board that their application for sanction to purchase an electric wagon for the removal of clinker does not come within the Treasury's stipulation of pressing requirements, either on grounds of public health or on account of war requirements. The Council have decided to repeat the application.

Orwell Electric Tipping Wagon for Cheltenham.—Ransomes, Sims, and Jeffries, Limited, have recently delivered to the borough electrical engineer an Orwell electric tipping wagon for service in the house and street refuse collection department. The machine, which is of standard type, is fitted with Ironclad-Exide batteries, giving a range of 40 miles at a speed of eight miles per hour on a single charge.

Tipping Lorries in Bedford.—The accompanying photograph represents one of three tipping lorries supplied by Commercial Cars, Limited, to the Bedford County Council in August, 1912, over five years ago. These lorries are of the "K.C." 5-ton type. The county engineer and surveyor has frequently referred to the performance of these machines in his reports to the Council, and is greatly impressed by their utility and low cost of working. No doubt if the war had not prevented it, the fleet would have been considerably increased by this time.

"Commer Car" 5-Ton Type of Tipping Lorry.

LIST OF GAS-FILLING STATIONS.

The first list of gas-filling stations for motor vehicles has been issued by the Commercial Motor Users' Association in the form of a 32-page booklet containing over 1,000 gas-filling stations classified under: London, England, Scotland, Ireland, and Wales. The information given comprises the name of the town, the points at which gas can be obtained, and the hours during which facilities are available. A copy will be posted gratis to any user on application to the Secretary, 83, Pall Mall, London, S.W.1. Mr. F. G. Bristow, secretary of the association, has been nominated to give evidence before the Government Gas Traction Committee on behalf of the commercial motor users.

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MOTOR TRAFFIC.

NAPIER BUSINESS VEHICLES IN THE WAR.

The accompanying photograph shows a batch of Napier business vehicles ready for despatch to one of our Allied Governments. It is well known that the Germans had foreseen the usefulness and utility of motor transport to a far greater extent than any other nation. Their rapid advance into Belgium was made possible by their far-seeing organisation, and proved that temporarily broken up railways need not be an insuperable obstacle to lightning-like concentration and advance.

Napier business vehicles have been used with great success in all theatres of war; and in German East Africa have done incomparable service when fitted with flanged wheels for use on rails. They have managed to upset all German calculations in the matter of our advance.

Bridges blown up and temporarily repaired could not bear a locomotive, but Napier lorries pulling weight up to 50 tons are safe to cross them, attain high speed and climb gradients with ease. This is a tribute to their value.

A Group of Napier Business Vehicles Ready for Despatch to one of our Allied Governments.

MOTOR TRAFFIC NOTES.

Commercial Motor Users' Association.—Mr. G. Williams Smith has been appointed to represent Westminster City Council on the committee of the Commercial Motor Users' Association for the ensuing year.

Parcels Delivery by Omnibus.—A parcels delivery has been introduced by the Birmingham and Midland Omnibus Company in connection with the passenger service. It will prove a great convenience to numerous villages situated at some distance from the railways.

Leeds Fire Brigade Motor Workshop.—The Watch Committee of the Leeds Council have decided to establish a workshop for motor vehicle repairs, but it will not be fully equipped at present. Meanwhile a drilling machine, electric motor and shafting have been installed.

Motor Trades Benevolent Fund.—Mr. Leo. Swain, manager of the solid tire department of George Spencer, Moulton and Company Limited, Deansgate, Manchester, has been appointed chairman of the Manchester centre of the Cycle and Motor Trades Benevolent Fund. The Herbert Frood Company, Limited, have contributed a patron fee of £100.

Petrol Contracts.—Hull City Council recently invited tenders for the supply of petroleum and motor spirit, but the firms who sent in communications declined to enter into a contract. They undertake, however, to give preference in supplies at spot prices. Under the national pooling of supplies consumers are not allowed to transfer their orders.

Motor Industry's Ex-Service Men.—The duties of hon. sec. to the Central Committee for Employment of Discharged Soldiers and Sailors connected with the motor industry have been undertaken by Mr. T. W. Loughborough. Up to Dec. 31 the special appeal for funds realised £585, including sums of £200 from the Birmingham Small Arms Company and the Daimler Company, Limited.

Comforts for Road Workers at the Front.—The Local Government Board have sanctioned local authorities subscribing to a fund for providing comforts for the road and quarry workers engaged under Brigadier-General Maybury on the western front. A committee has been formed for managing the fund, with Mr. E. L. Morgan, borough engineer of Bolton, as hon. secretary.

Austin Cars in the Tank Race.—The most exciting incident witnessed during the Tank Bank's last day in Birmingham was the appearance of a fleet of Austin armoured cars, which had been driven from Longbridge Works, Northfield, to Victoria Square, headed by the Austin band and guarded by Austin volunteers. The inscription on one vehicle informed the crowds that it was the "Austin Tank Cheque." Another stated, "This is the workers' efforts," and the last one bore the prophetic assurance, justified later in the day, "Tank race; Birmingham first." The Austin cheque, which was for £96,875, in payment of 125,000 war savings certificates by the employees, was handed to the Lord Mayor on the top of the Tank.

Omnibus Difficulties at Aldershot.—Writing with reference to complaints from Farnborough and district as to the service provided by the Aldershot and District Traction Company, Mr. W. E. Foster, chairman of the company, has called attention to the directors' annual report, in which it is stated that the unsatisfactory result of the year's working was chiefly due to loss of skilled labour, the difficulty of getting spare parts, which necessitated a reduction of the services, and to the heavy increase in the price of petrol, materials, and wages. Mr. Foster suggests that the public bodies in the district should notify to the tribunals whether they consider it to be in the public interest that the company should be provided with the adequate number of skilled employees.

General Vehicle Company's Exports to the United Kingdom.—Cable advices show that President Wilson has agreed that every encouragement shall be given to the continued output of electric lorries both for home trade and export to the United Kingdom. The U.S.A. Aeronautical Department has purchased the rotary engine division of the Long Island City Factory of the General Vehicle Company for £500,000, but the terms of the contract expressly protect the electric vehicle departments, and every facility will be provided for their increased production if required. It is understood that the present depletion of transport in the United Kingdom largely accounted for the decision not to interfere with the General Vehicle Company's export trade.

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THE

Tramway & Railway World

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

COUNTY BOROUGH OF BELFAST.

Tramway Stores.

The Tramways and Electricity Committee invite Tenders for the supply of the undermentioned Stores:—

1. Bolts and Screws, Files, Iron and Steel.
2. Forgings, Castings, Springs, Brake Chains.
3. Electrical Accessories, Cable, Lamps, Carbon Brushes, Insulation, Fingers for Westinghouse No. 90M. Controller, Copper and Brass Wire, etc.
4. Spares for No. 200 Westinghouse Motors, Spares for Westinghouse No. 90M. Controllers, Trolley Heads, etc.
5. Rope, Belting, Canvas, Rubber, Leather Bags, Destination Screens.
6. Oil, Grease, Waste, Soap, Brushes.
7. Paint, Varnish, Transfers, Gold Leaf, Drysalteries.
8. Timber.
9. Car Brass Furniture, Destination Indicator Fittings.
10. Trolley Wire, Trolley Ears, Insulated Bolts, Galvanised Wires.

Forms of Tender can be obtained on application to the General Manager, Tramways Department, Napier Street, Sandy Row, Belfast, upon payment of 2s. 6d., which will be returned upon receipt of a *bona fide* Tender.

The Committee do not bind themselves to accept the lowest or any Tender. The whole or any part of a Tender sent in may be accepted, and Tenders shall be open for acceptance by the Corporation until May 10 next.

This Tender must be enclosed in an envelope, duly sealed, and addressed to the undersigned, endorsed—"Tender for Stores,, Tramways Department," and must be received in the City Hall Belfast, not later than TEN o'clock a.m., on Saturday, March 9th, 1918.

An official receipt must be obtained for every Tender delivered by hand. Tenders sent by post must be registered.

R. MEYER,
Town Clerk.

City Hall, Belfast,
February, 1918.

MANCHESTER CORPORATION TRAMWAYS.

The Tramways Committee of the Manchester Corporation are prepared to receive tenders for the supply of the following, viz.:—

(*a*) Permanent Way Special Track Work.
(*b*) Tramway Rail Bonds (Copper).

Specifications and forms of tender may be obtained on application to Mr. J. M. McElroy, General Manager, Corporation Tramways, 55, Piccadilly, Manchester. Applications for specifications, etc., for (*a*) Permanent Way Special Track Work, must be accompanied by a deposit of £1 1s., which will not be returned except on receipt of a *bona fide* tender. Tenders are to be addressed to the Chairman of the Tramways Committee, 55, Piccadilly, Manchester, and must be received not later than 10 a.m. on Tuesday, March 12, 1918.

The Committee do not bind themselves to accept the lowest or any tender.

THOMAS HUDSON,
Town Clerk.

Town Hall,
Manchester.
February 16, 1918.

COUNTY BOROUGH OF WARRINGTON.

Electricity Department.

The Electricity and Tramways Committee of the County Borough of Warrington invite Tender for E.H.T. Switchgear.

Specification and Form of Tender can be obtained from the undersigned on payment of One Guinea, which will be returned on receipt of a *bona-fide* Tender.

Five Shillings will be charged for extra copies of the specification.

Tenders, addressed to the Chairman of the Electricity and Tramways Committee, Town Hall, Warrington, must be sealed with wax, and endorsed "Tender for E.H.T. Switchgear," and delivered not later than 12 o'clock noon on Tuesday, March 5th, 1918.

The lowest or any Tender will not necessarily be accepted.

F. V. L. MATHIAS.
Borough Electrical and Tramways Engineer.

Howley, Warrington.

POSITIONS VACANT.

WEST HARTLEPOOL CORPORATION TRAMWAYS.

Tenders are invited for the use of the advertising spaces upon the tramcars belonging to the Corporation.

Full particulars will be given upon application to the undersigned.

J. W. SPARK,
Acting Tramways Manager.

Tramway Depot,
Cleveland Road,
West Hartlepool.
February 8, 1918.

ASSISTANT ENGINEER WANTED.

Competent Electrical and Mechanical Engineer required as Chief Assistant; power station, mains, installation and commercial experience necessary. Permanent post to suitable man. Commencing salary £250 per annum.

Applications, stating age, experiece, when able to commence, and copies of recent testimonials, to be forwarded to H. P. STOKES, Electrical Engineer and Tramways Manager, Broadway, Bexleyheath.

ASSISTANT ENGINEER.

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SATURDAY, FEBRUARY 16, 1918

TRAMWAY PASSENGERS AND OVERTAKING VEHICLES.

We have on previous occasions referred to the important and valuable by-law possessed by the Corporation of Glasgow with regard to vehicles overtaking tramcars at stopping-places. A legal decision which has just been pronounced gives the by-law even fuller efficacy than before, because it lays down that the transgressor cannot succeed on a plea of contributory negligence on the part of the tramway passenger. Under the general law applicable to the three kingdoms, drivers of vehicles which overtake tramcars are at liberty to pass on either the near or the off side, but the onus is left on the driver of the vehicle to use all proper care. In many, if not most, cases the passing is done while the tramcar is standing at a stopping place. It is the habit of many drivers to pass on the near side, and thus they endanger the tramway passengers who are leaving or about to enter the stationary car. The trouble, in the case of reckless drivers, is very acute, but Glasgow Corporation appears to be the only tramway authority which has obtained a remedy. In April, 1915, the Corporation obtained sanction for a by-law providing that when a tramcar is standing at a stopping-place every driver of a vehicle who intends to pass on the near side shall draw up immediately before arriving at the stopping-place and wait until the roadway is clear of passengers entering or leaving the car. It has been reported that since the by-law came into operation there has been a notable reduction in the number of accidents at stopping-places. The judgment which was given a few days ago in an appeal to the Sheriff-Principal in Edinburgh Sheriff Court is important. The action was raised by David Cutler against Sym & Company, engineers, Broxburn, and the Sheriff-Substitute awarded him £35 damages for personal injuries sustained through being knocked down by a motor-car belonging to the defenders while he was alighting from a tramcar at a stopping place in Cowcaddens Street, Glasgow. The defenders pleaded that the pursuer contributed to the accident by failing to look to see whether any vehicle was approaching. On appeal, the Sheriff-Principal has affirmed the decision. It is therefore clear that under the Glasgow by-law there is no obligation on the tramway passenger crossing the space between the stationary car and the footpath to look out for approaching vehicles. In other words, the plea of contributing negligence, if put forward by the owner of the overtaking vehicle, avails nothing. The judgment seems right on the face of it, because the by-law explicitly says that the driver shall draw up and wait until the roadway is clear of passengers entering or leaving the tramcar. So far as we are aware, no other tramway authority except Glasgow has a by-law of the kind, and it would be interesting to learn why not. The need for it in all our large towns is acute, and in London especially where such a large proportion of the wheel traffic is fast-moving, and where owing to the size of the tramway cars the number of passengers leaving and entering is large, such a by-law would be of great value. So far as automobile vehicles are concerned, the rule could probably be applied to the whole country by a Motor Car Order, but in order to cover all vehicles possible a clause in an Act of Parliament might be necessary. Thereby both generality of application and identity in provision would be secured for all towns where tramways exist.

NATIONAL TRAMWAYS COMMITTEE.

MEETINGS IN THE DISTRICT AREAS.

The Tramways (Board of Trade) Committee have followed up their scheme for the formation of area sub-committees by arranging for a meeting of representatives of tramway undertakings to be held in the nine areas into which they have divided the British tramway systems. As stated in our issue of February 9, the areas are: (1) Metropolitan and East Coast; (2) South-East and South to Bournemouth; (3) South-West and South, excluding Bournemouth; (4) Midlands; (5) Lancashire, Cheshire and Wales (North); (6) Yorkshire and Lincolnshire; (7) Northern; (8) Scotland; (9) Wales (South).

The *Board of Trade Journal* gives the following list of places and dates of forthcoming meetings :—

Area.	*Place.*	*Date.*
Scotland	Glasgow ..	Monday, 18th inst.
Northern	Newcastle ..	Tuesday, 19th inst.
Yorkshire and Lincolnshire	York ..	Wednesday, 20th inst.
Lancashire, Cheshire and Wales (North) ..	Liverpool ..	Thursday, 21st inst.
Midlands	Birmingham ..	Friday, 22nd inst.
Wales (South)	Cardiff ..	Monday, 25th inst.
South West and South ..	Bristol ..	Tuesday, 26th inst.
Metropolitan and East Coast.	London ..	Wednesday, 27th inst.
South East and South ..		

Two representatives, at least, of each tramway undertaking in other areas are invited to attend the local meetings for the purpose of appointing small local advisory committees. The precise time and place of the meetings will be communicated to them. The chairman of the Tramways Committee, Mr. James Devonshire, will attend and speak at all the meetings.

Cardiff Corporation have asked the Board of Trade to add a representative from South Wales to the Committee. It has been decided to convene a conference of representatives of the tramways in Cardiff, Newport, Pontypridd, and Swansea, to consider the matter. The Midland Municipal Tramways Association has also asked the Board of Trade to add to the Committee a representative from the Midland district.

Dundee Tramways Committee have agreed to the request of the Tramways (Board of Trade) Committee to give up certain lengths of track at various termini. In one case an alternative route is being relinquished on behalf of national interests. It has been arranged that no cars shall be surrendered, but a large number of poles on discarded routes will be taken up for use elsewhere.

THE QUESTION OF FARES.

In the House of Commons on Thursday, Mr. Gilbert asked the President of the Board of Trade what were the original terms of reference given by him when he appointed the Tramway Committee; whether such terms of reference were extended by him in a letter sent to the Committee and had such letter been made public; whether he would state the date and terms of the letter and whether it contained any suggestions that municipal tramway undertakings and limited company tramways should be invited to consider proposals for increasing tramway fares. Mr. Wardle

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replied : I am sending the hon. gentleman a copy of the terms of reference of the Tramways (Board of Trade) Committee. These terms of reference have not been extended. A more detailed communication of the nature of the duties which it is expected that the Committee will have to undertake has been communicated to them and has been published in the *Board of Trade Journal*. Among these duties is the consideration of such proposals for the revision of statutory tramway fares as may be referred to the Committee by the Board of Trade.

NEW CARS FOR MONTREAL.

The J. G. Brill Company recently delivered to the Montreal Tramways Committee one hundred new cars of the double-unit type, similar to those now in use except in a few minor details. The unit consists of a motor car equipped with four motors and a trailer with two motors. Both car bodies and trucks were made in Philadelphia, but were assembled and electrically equipped in the tramway company's shops. The following are some of the principal particulars of the cars :—

	Total weight.	Seating capacity.	Bolster centre.	Length over buffers.	Length over vestibule.
Motors	45,000 lb.	42	21 ft.	45 ft. 3 ins.	44 ft. 3 ins
Trailers	38,000 lb.	45	21 ft.	44 ft. 3 ins.	43 ft. 3 ins

The width over all is 8 ft. 5 ins. ; rail to trolley base, 11 ft. 4½ ins. ; motors, Canadian Westinghouse, 533-T-4 ; motor cars 4, trailers 2 ; trucks, Brill 76 E ; wheels, standard cast-iron, 30 ins. ; brakes, air and hand.

The air brakes can be applied by either motorman or conductor, and if the cars are accidentally separated the brakes automatically come into operation. The automatic equipment is operated from storage batteries, so that it is independent of the usual power. The two cars are controlled by a master controller of the Westinghouse type P.K. multiple, which is placed in the vestibule of each car. The motor cars are equipped with four motors each and the trailer with two motors, giving a total of 330 h.-p., but 600 h.-p. can be developed for a short period. The entrance and exit are of ample proportions. There is a separate exit in the motorman's vestibule of the leading car, but the main entrance and exit are at the rear, while those of the trailer car are in front. The doors are interlocked on a power system, which makes it impossible for the cars to be started until all the doors are closed.

The *Canadian Electrical News*, of Toronto, says that the company are so well satisfied with the new trains that additional cars have been ordered. It has been found that the two cars can receive their loads and discharge their passengers practically in the same time as a single car.

LIBEL ON A TRAMWAY MANAGER.

At the Nottingham Assizes, on February 7, Mr. John Aldworth, general manager of the Nottingham Corporation Tramways, sued Mr. E. C. Smith, a lithographic artist, claiming damages for libel. The libel consisted of an accusation against the plaintiff that he ran overcrowded cars to the danger of the public, and there was also an allegation of untruthfulness against the plaintiff and reflections upon the management of the tramways generally.

Mr. H. Walker, K.C., for the plaintiff, said that a campaign of denunciation and scurrility had been directed against Mr. Aldworth by the defendant, who nursed an alleged grievance as to transfer fares. On January 9, 1916, the defendant wrote a letter to Mr. R. H. Swain, chairman of the Tramways Committee, in which, after some personal abuse, he said he accused the manager of not managing his business, of failing to keep the cars in good condition, and properly to control the service. Other letters of a similar character were written to the Mayor.

The case was concluded on February 9, when the defendant, addressing the jury, denied that he had been actuated by malice. He admitted that he might have been rather rude, but it was his temperament—he could not help it. He was more determined than ever to continue his criticism. The plaintiff gave evidence and denied the whole of the defendant's allegations, but in cross-examination admitted that the cars were at times overcrowded, owing to war conditions.

Mr. Justice Horridge in his summing up commented upon the letters written, and said the jury must carefully ask themselves if such comment was fair. Regarding the question of malice he thought that, quite apart from the letters, there was some question of motive outside fair comment. In conclusion his Lordship said that if the jury thought damages were due they should be moderate, but not a farthing or 40s., lest the public might wrongly interpret the award.

The jury found for the plaintiff and awarded him £20 damages with costs. The Judge granted an injunction restraining the defendant from repeating the libels.

Leeds Stops to be Re-arranged.—With a view to obviating congestion and rushes of passengers for cars, a scheme whereby the stopping places have been extensively rearranged has been adopted by the Leeds Tramways Committee. Barriers will be erected in Briggate and other points, and a number of stops in the central portions of the city will be abandoned. It is anticipated that the measures now adopted will tend to obviate the crowding of passengers at the busy centres, and the introduction of the queue system will do away with the struggling to board the cars which has been the chief source of complaint.

WAGES AND WAR BONUSES.

Blackburn Corporation Tramways Committee has held a conference with the representatives of the Amalgamated Society of Tramway and Vehicle Workers and the Municipal Employees. Protection Society, when an agreement was reached on the question of war bonuses. It has been agreed that the men shall receive a bonus of 2s. per day or per shift and 14s. for a week of seven shifts. The Amalgamated Society of Tramway and Vehicle Workers desired that it should be made a condition of employment that all men working on the tramways should be members of that society, but this question has been deferred for further consideration.

Representatives of the Transport Workers' Federation last week privately met Mr. G. H. Roberts, the Minister of Labour, to discuss the demand of the Federation that the employers of tramway and omnibus undertakings should negotiate with the Federation on the question of extending to tramway and omnibus employees the claim for an advance of £1 per week on pre-war wages, which was recently granted to commercial vehicle drivers. It is understood that Mr. Roberts undertook to take steps towards securing a joint meeting of the employers and the men's representatives with a view to securing a settlement of the matter on a national basis.

Rochdale Town Council has protested against a decision having been arrived at in dealing with the question of the wages of employees of electricity undertakings without affording to the authorities concerned any opportunity of being heard on the questions raised. The resolution was taken as passed in connection with the award of Sir George Askwith according an advance of 12½ per cent. in wages to workers in generating stations.

A Committee of the Burton Corporation has decided to recommend that additional war wages be granted to tramway employees as follows, viz., men, 8s. per week ; youths up to 16, 3s. per week ; youths of 17 to 18, 4s. ; youths of 19, 6s. ; and women, 5s. per week.

USE OF GAS ON MOTOR VEHICLES.

According to evidence placed before the Gas Traction Committee, 4,500 commercial motor vehicles have been equipped for gas propulsion, and to this number it is estimated some 2,500 will be added during the next few months. The estimated saving of petrol is already at the rate of, approximately, 3,000,000 gallons a year.

The Committee is sitting weekly, and hopes to issue an interim report shortly. This will deal primarily with the use of gas practically at atmospheric pressure in flexible containers, and will probably indicate the limits of approved use under pressure, during the continuance of the war, in semi-rigid containers. The second and later stage of investigation will be concerned in detail with the use of compressed gas at high pressures.

Evidence has so far been taken from witnesses on behalf of the following :—

The British Automobile Traction Company (Limited) ; Society of British Gas Industries (Meter Section) ; Rotary Meter Company (1905) (Limited) ; Royal Automobile Club ; Motor Gas Equipment Association ; Society of Motor Manufacturers and Traders and the Technical Committee of the Motor Industry ; the Motor Trade Association ; Institution of Gas Engineers ; Commercial Motor Users' Association (Incorporated).

Further evidence has been arranged for presentation by the following :—

The British Commercial Gas Association ; Institution of Municipal and County Engineers ; County Councils Association ; County Surveyors' Society ; London and Provincial Omnibus Owners' Association ; Manufacturers of semi-rigid containers ; Fire Offices Committee.

The Committee will also hear the views of the Priority Department and the Ministry of National Service, representatives of which branches have attended several meetings, and the Controller of Coal Mines.

MISCELLANEOUS NEWS AND NOTES.

Restricted Service at Barrow.—Barrow Electric Tramways Company have notified the Corporation that, owing to the decrease in their staff, the company have been compelled to run fewer cars during the day.

An Uxbridge Stoppage.—A slipped trolley arm caused a stoppage of several hours' duration on the route through High Street, Uxbridge, last week. The guard wire was brought down and became "live," rendering it necessary to switch off the current.

Traffic Record at Blackpool.—Mr. Charles Furness reported at the last meeting of the Tramways Committee that the total receipts since April 1 had been over £100,000. The previous record was made last year, when the receipts amounted to £94,000.

Newport Extensions.—The application of the Newport Electricity and Tramways Committee to borrow £35,236, repayable in thirty years, for additional machinery and extensions to the East power station, has been approved by the Ministry of Munitions.

Gas Instead of Petrol.—The Board of Trade has agreed to the application of the York Corporation Tramways Committee for the purchase of a spare, or second, omnibus, for the Leeman Road service, provided that gas and not petrol be used as a motive power.

Auto-Carriers, Ltd.—A rumour has been circulated to the effect that Auto-Carriers, Ltd., is about to be amalgamated with a large firm engaged in Government contracts. We have been requested to state that no move in the direction suggested is in contemplation.

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Motor Instruction.—Hull Corporation Education Committee has adopted the recommendation of the Principal of the Technical College for the purchase of machine details from the Daimler Motor Company at a cost of about £40 per annum.

Leeds Tramway Parcels Delivery Scheme.—The Emergency Committee of the Leeds Chamber of Trade have passed a resolution recommending all traders in the city to give their best support to the proposed scheme of local parcels delivery by the tramways.

Epidemic of Spurious Coins on Tramcars.—There are signs in London of attempts on a somewhat large scale to pass counterfeit coins. Tramcars and omnibuses appear to be particularly favoured by the delinquents, who, it is believed, generally operate in couples.

Plymouth's Concession to Wounded.—Owing to the great pressure on the tramway service it was not found possible to agree to a motion to allow wounded soldiers and sailors unlimited freedom of the cars. Arrangements have been made to issue 500 free tickets weekly, these to be distributed amongst the men at the hospitals.

National Work.—Unfit discharged men who have not served overseas will under the recent concession be allowed to take up work of national importance in preference to rejoining the colours. Such work has been defined by the Minister of National Service as embracing among other occupations railways, tramways, gas, water and electrical undertakings.

London United Tramways Bill.—The Middlesex and the Surrey County Councils have decided strongly to oppose the bill of the London United Tramways Company, and to make representation to Parliament that before any fresh powers are granted to the company, it should be made a condition that the company should be reconstructed on a firm financial basis.

Ashton-under-Lyne Corporation have decided to apply to the Board of Trade for an order extending for one year the period in which they have the power to purchase that part of the undertaking of the Oldham, Ashton and Hyde Tramways Co., Ltd., which is within their borough. Oldham Corporation was by an error mentioned in a paragraph in our last issue instead of Ashton.

New Stopping-place Annunciator.—A patent recently granted relates to an appliance for announcing to passengers in tramway and other vehicles the name of the next stopping place. Its essential features are a trumpet similar to a megaphone both inside and on the top deck of the car connected by tubing to a mouthpiece near the driver.

London Tramway Cars Stopped by Salt.—During the last snowfall in London there were no tramway car breakdowns on tracks where salt was not used to melt the snow. On tracks where salt had been used over 600 ploughs became faulty within eight days, owing to the salt getting into the conduit. The London County Council has consequently asked the local authorities to cease the use of salt.

Committee on Production.—The appointment to the Committee on Production as additional members is announced of His Honour Judge Roberts (Chairman of Panels) and Mr. James Gavin. They will also be members of the Special Arbitration Tribunal appointed by the Ministry of Munitions to deal with questions arising out of the Orders granting a bonus to certain munition workers.

Complaints at Carlisle.—At the last meeting of the Carlisle City Council a report of the Watch Committee was considered on the subject of complaints made as to the alleged unsatisfactory condition of rolling stock on the local tramways. The Committee's recommendation, which was adopted, was that the General Purposes Committee be asked to take the question into serious consideration "with a view to some definite action."

Closed Halifax Route Reopened.—At its meeting last week the Halifax Town Council resolved to restore the service on what is known as the circular route, thus reversing a decision of only a month ago to suspend this same service. The Chairman of the Tramways Committee (Alderman C. F. Spencer) was opposed to the restoration but the withdrawal of the service had led to an apparently unexpected volume of protest on the part of the ratepayers.

The "Lights Down" Order in Dublin.—As a result of the Restriction of Lights Order which came into force in Dublin and district on the 10th inst. the illumination of the cars, etc., on the Dublin United Tramways Company's system has been considerably modified. The glass of the cars on the Dalkey, Howth, Sandymount, and Kingstown routes has been painted blue, as well as the glass in the power station at Kingsend, the glass roofs of Clontarf and Sandymount Stations, and the glass in the parcels office at Howth.

Track Difficulties at Leeds.—Owing to the deterioration of tracks and the great difficulty of obtaining new material the Leeds Tramways Department are faced with considerable anxieties. In a statement on the subject made at the last meeting of the City Council, Alderman R. A. Smithson, chairman of the Tramway Committee, said they would be reluctant to interfere with the service, but the only alternative to so doing was the possibility that they might be able to buy rails from other towns. Even if they could, however, the cost would be enormous.

L.C.C.'s Press Advertising Campaign.—In pursuance of the scheme launched a few weeks ago of bringing the essential and interesting features of its tramway system more prominently before the notice of the public by means of announcements in the daily press, the London County Council makes timely use of this means of advising passengers of the measures being taken to reduce congestion and delay at certain busy centres. In addition, the public are told in direct and simple terms exactly what they should do to help matters, whilst the use of the expression "entram" apparently adds yet another word to our common vocabulary.

Result of Withdrawal of Halfpenny Fares.—A certain overplus of halfpennies in current coin has lately been noticeable. Whenever one is given coppers nowadays, there is nearly always an inconveniently large proportion of halfpennies. One of the principal factors in this condition of things is to be found in the withdrawal of halfpenny fares of tramcars and omnibuses, which, with the virtual abolition of the halfpenny paper, have eliminated the more obvious uses of this particular coin.

Coventry Women Tramway Employees Protest.—As a protest against food queues, in relation to themselves, women drivers and conductors on the Coventry Corporation Tramways struck work for some hours on Friday last week. After a conference between the Tramway officials, the Chief Constable and the Local Food Controller, they consented to resume, on the understanding that measures would be taken by means of a card or similar system to meet their case. They alleged that, owing to their being engaged in their duties during the whole of the day, they have no opportunities for shopping until all foodstuffs are sold out.

London "Safety First" Council.—At the first annual general meeting of the London "Safety First" Council, which will be held at Caxton Hall, Westminster, S.W., on Monday next, February 18th inst, at 3 p.m., Lord Sydenham of Combe, G.C.M.G., G.C.I.E., F.R.S., in the chair will be supported by the President of the Local Government Board (The Rt. Hon. W. Hayes Fisher, M.P.), Sir Richard V. Vassar-Smith (President of the Federation of British Industries), a number of Members of Parliament, Mayors and others prominent in Local Government and commercial circles. The adoption of the first annual report will be moved by Mr. W. Joynson-Hicks, M.P., and seconded by Sir Edward Smith, L.C.C., Chairman and Vice-Chairman of the Council, respectively.

Carrying Excessive Number.—A somewhat exceptional case of overcrowding was revealed at St. Helens recently, when the driver and conductor of one of the local tramcars were summoned for permitting overcrowding. It appeared that no less than 33 persons in excess of the proper number were being carried, viz., 86 on a car licensed for 53. The passengers were all munition workers, and two tramway officials pleaded that they were helpless, the company being very short of staff. This the Chief Constable said he recognised, but felt some better means of regulation should be adopted, and hoped that the prosecution might be of service to the Company in assisting them to obtain more men, or the return from the Army of some of those who had been taken.

London "Safety First" Council's New Poster.—The latest of the admirable series of posters issued by this organisation bears the title of "Dont's for Cyclists." Beginning with the preliminary statement that since the war more than 110 cyclists have been killed and 1,700 injured in the streets of the Metropolitan area, and expressing the belief that a number of these accidents were avoidable, it proceeds to point out by means of letterpress and illustrations some of the more important things that cyclists should remember for their own safety. These both convey their meaning in the clearest possible manner, and, whilst they seek to convey nothing more than one's own common sense would suggest, the advice given is by no means of so elementary a character that even the most experienced of riders may not profit by it.

A Conductor's Duty.—In an application at Torquay County Court last week, for a new trial of an action in which damages had been awarded to a passenger in an action in respect of injury sustained by a passenger, a ruling of some importance was given by the Judge. The plaintiff's case was that the car had moved without warning, whilst he was attempting to board it. For the Company it was contended that he had been warned not to get on. It was not disputed, however, that the conductress was not in her place at the rear platform at the time, and this the Judge then ruled constituted negligence on the part of the company. In dismissing the application, his Honour said he was prepared to hold that it was the duty of a conductor to be in a position to see whether passengers were about to get on. There was no contributory negligence on plaintiff's part.

Tramway Official and Motor Spirit Order.—A case of peculiarly stupid interpretation by the police of the Motor Spirit Restriction Order, the purpose of which is to stop the use of motor vehicles of any kind for pleasure purposes, was revealed in a summons heard at Dundee last week. One of the engineers of the Corporation tramways was in the habit of using a motor cycle to carry out his duties of examining section boxes, etc. A fairly considerable distance has to be covered, and the work can only be done late at night, or in the small hours of the morning, with the current off. He appears, however, on the date to which the summons related to have made a private call. This did not take him out of the direction of his work, but, nevertheless, proceedings were taken. The magistrates, however, adopting the obvious common-sense view, dismissed the case.

Prices of Motor Spirit.—An Order, to take effect on March 1, under the Defence of the Realm Act, has been made by the Board of Trade, whereby the retail price of all grades of motor spirit is fixed at 15 per cent., or a maximum of 5d. a gallon, above the cost of the spirit to the retailers. The Order also limits the price of lamp oil to 4d. a gallon above its cost to the retailers. For some time past the price of petrol has been strictly limited to 15 per cent. above the wholesale price by an agreement between the importers and the Motor Traders' Association, but, as the wholesale price increases, the 15 per cent., without any limit such as that fixed by the Order, tends to give an excessive profit to the retailer. In regard to lamp oil there has been no corresponding agreement, with the result that retailers have in many instances exacted prices which give them profits approaching 100 per cent.

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Congestion at Glasgow.—In common with Leeds and other cities Glasgow is experiencing great trouble in dealing with the congestion of tramway passengers. The daily struggle at various points to board the cars have become more and more intense and dangerous. Unfortunately, however, the problem of remedying these conditions is not easy of solution. To some extent it is aggravated by the difficulty of repairing cars, and the consequently depleted service, but this is uot altogether the root cause of the trouble, and in Glasgow there are certain obvious objections to setting up barriers in the streets that would be necessary for the queue system.

Protection for Glasgow Passengers.—There is in Glasgow a Corporation by-law which explicitly requires that vehicles travelling in the same direction as a tramway car must stop to allow passengers from the latter to alight at stopping places. It has now been established by a decision on appeal in the Edinburgh Sheriff Court that the effect of this by-law is, that in the event of proceedings arising out of a tramcar passenger being knocked down and injured, the plea of contributing negligence in respect of failure to look out for approaching vehicles cannot be admitted. The by-law imposes an absolute obligation for all approaching vehicles to stop at all times when tramcars are discharging passengers at the accustomed stopping points.

Opposition to Yorkshire Electric Power Bill.—At a conference of, representatives of West Riding local authorities (non-county borough and urban and district councils) held at Wakefield a few days ago, to consider the bill being promoted by the Yorkshire Electric Power Company for the extension of that company's powers the following resolution was adopted, viz :—" That this Conference is of opinion that the Bill now being promoted by the Yorkshire Electric Power Company seriously prejudices the rights of local authorities within the area of supply, and recommends that the Bill be opposed." One of the features of the bill is that it would make it obligatory on authorities who have not obtained powers of supply to take current from the Company. The Barnsley Town Council have also decided to oppose the bill, it being regarded as prejudicial to the interests of the borough in regard to the extension of its boundaries.

Edinburgh Cable Trouble.—Mr. J. D. R. Cox, general manager of the Edinburgh and District Tramways Company, recently made a statement to representatives of the local newspapers with the object of preparing the public for interruptions of car services. Mr. Cox said it was impossible to get new cables to replace cables that have got into such a condition as to be no longer reliable. Priority permits have been obtained from time to time from the Ministry of Munitions for limited quantities of cable, but in view of the demands by Government authorities for steel required for munitions, it is now possible to obtain permits only for reduced quantities of tramway cable. Formerly there were spare cables on the drums at the depots, so that in the event of a cable showing signs of breaking it could be taken out. Now there are no spare cables, and those in use have been spliced and patched until they have ceased to be reliable.

Morecambe Omnibus Scheme.—Morecambe Corporation in a bill in the present session is seeking powers to run motor omnibuses as part of the tramway undertaking within the borough and in the borough of Lancaster, the urban districts of Carnforth and Heysham, and in all the townships in the rural districts of Lancaster and Lunesdale. The area comprises about 216 square miles. The bill provides for the conveyance of passengers and parcels, and powers are included to acquire the necessary land and buildings for these purposes. It is reported that various local authorities affected by the bill intend to oppose the powers sought by the Corporation on the ground that the service will be provided mainly for the purpose of the pleasure traffic emanating from the borough during the summer months. It is contended that the main roads affected are in places unsuitable for motor omnibuses traffic, and that the secondary and district roads are wholly inadequate for the purpose.

Road Reinforcement.—The British Reinforced Concrete Engineering Company have issued the eighth number of " Road Reinforcement," an illustrated pamphlet advocating the improvement of roads, particularly by means of the B.R.C. fabric. The present issue contains some account of road maintenance in former times, and there are references to the satisfactory experience of reinforced road foundations at the present time. It is mentioned that the total expenditure on urban roads in England and Wales is £10,000,000 per annum, and on rural roads £5,000,000 per annum. The former is made up of about 50 per cent. maintenance and 50 per cent. local charges and other items. The latter is almost entirely maintenance charges. Mr. J. P. Wakeford, in a discussion at the conference of the Institution of Municipal and County Engineers in June last, said that " one of the principal sources, if not the chief source, of weakness of provincial roads lies in the defective foundation."

Dublin Tramways and Increased Fare Proposal.—At the annual meeting of shareholders of the Dublin United Tramways Co., Ltd., last week, Mr. W. M. Murphy, the chairman stated that the directors had hitherto relied on the increasing traffic receipts to meet the increased expenses of working, and had so far refrained from raising the fares; but, he added, some action in this respect cannot be long delayed, for it was the only way he was able to see by which they could retrieve their position in the face of ever-growing working costs. On every other tramway in the kingdom, whether owned by Municipalities or companies, including Belfast tramways, so far as he could find out, the fares had been raised. The Corporation of Dublin, in a kindred business, had advanced the price of electric light and power on three or four different occasions. Everyone who had anything to sell had had to do so. In their case there were certain fares fixed by Statute, which could not be increased without statutory authority, but there were many others which were established for the convenience of the public and to popularise travelling on the tramways which could be raised. He alluded to the overlapping stages, for which they were under no legal obligation. The abolition of these overlapping stages should add materially to their receipts, though the number of passengers might be reduced. He was not making a definite announcement on the question of fares, but he wanted to prepare the public for some move in the direction of increasing them. Most people, if they thought on the subject at all, were probably wondering how they got on so well with the old fares; and, indeed, he would sometimes wonder at it himself if he did not know what a capable staff were able to do when put to it.

Board of Trade Enquiry on Bradford Accident.—The Board of Trade enquiry into the cause of the accident reported last week in which a car belonging to the Bradford Corporation tramways failed to stop on an incline, and was overturned, the driver being killed, was held by Colonel Pringle. The evidence tendered by the tramways and other officials showed that the track was in good condition, and that the whole of the under structure of the car-frame, truck and motor—was renewed in 1914. In addition, it had been completely overhauled as recently as the 25th of last month. The assistant engineer to the tramways department said that on visiting the scene of the accident he found marks of the right-hand wheels of the car having left the rails, and also marks of the axle boxes on the roadway. All these marks were in the interspace between the two tracks. The conclusion he drew was that the car was in the act of overturning when it left the rails, and that only the right-hand wheels were then in contact with the road. It was not a sharp curve, and worked very smoothly. The gradients on the track were 1 in 17 until the curve commenced, where they were 1 in 24 and in 25. He would not describe the gradients as possessing serious difficulty. On examining the car he found the hand-wheel blocks unapplied, and the power brake operating handles in the " off " position at both ends of the car. When the car was pulled back on to the rails the hand brake and controller were tried, and found to be in good order. Witness came to the conclusion that the accident was not caused by failure of the brakes, and said that his opinion was that the driver had lost consciousness, with the result that the car, out of control, travelled at a speed so high as to overturn it. He considered the track safe up to 15 miles an hour. Testimony was then given as to the lighting of the streets, and on this somewhat forcible comments were made by Col. Pringle. After further evidence from employees and passengers the enquiry was concluded. The report will be issued in due course

PERSONAL.

Mr. J. B. Meek, acting city engineer of Manchester Corporation, has been appointed city engineer at a salary of £1,000 per annum.

Mr. P. J. Baker, electrical engineer of Plymouth Corporation, has been recommended by the Tramways Committee to receive an increase in salary of £50 per annum.

Mr. A. P. Trotter has accepted the presidency of the Illuminating Engineers' Society. Mr. Trotter is a partner in the firm of Handcock, Dykes and Trotter, consulting engineer.

Mr. R. L. Acland, borough electrical engineer and tramways manager, Chesterfield Corporation, and various other officials, have been granted a bonus of 7½ per cent. on their salaries.

Mr. G. C. Jarrard will read a paper on " Switchgear Standardisation " at the Institution of Electrical Engineers on Thursday, February 21, at 6 p.m. (Institute of Civil Engineers, Great George Street, S.W.).

New Chairman for Belfast Tramways Committee.—For the twelve months ensuing from March 31 next, Councillor J. C. White and Councillor J. A. Duff have been elected respectively chairman and vice-chairman of the Belfast Corporation Tramways and Electricity Committee.

Mr. John O'Neill, whom many of our readers will remember as the manager of the Liverpool tramways before they were taken over by the Corporation, resides at Blundell Sands, near Liverpool. The *Liverpool Daily Post* says that he may be seen out almost daily on his tricycle, while indoors his leisure is devoted to sculpture, in which he is an adept.

Blackpool Employees' D.C.M.—" For conspicuous gallantry and devotion to duty . . . in laying and maintaining under heavy and continuous barrage a telephone line, and in getting through information of the most vital nature to headquarters," Bombardier A. Hirst, R.F.A., formerly an electrician in the Blackpool Corporation tramways department, has been awarded the D.C.M.

FINANCIAL REPORTS AND MEETINGS.

Newcastle-on-Tyne Electric Supply Co., Ltd., have declared a final dividend of 5½ per cent. on the Ordinary shares. This makes 8 per cent. for the past year.

Hong Kong Tramway Co., Ltd.—A final dividend of 14 per cent., making 23 per cent. for the year, has been declared. The sum of £42,267 is carried forward.

Mather and Platt, Ltd.—The directors of this Company recommend a final dividend of 12½ per cent. on the Ordinary shares, making 17½ per cent. for the past year. In 1916 the total distribution was also 17½ per cent.; those for 1915 and 1914 being 12½ per cent., and for 1913, 15 per cent.

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Clontarf and Hill of Howth Tramways Company.—A dividend at the rate of 3 per cent. per annum, and 1s. per share bonus, less income tax, was declared at the ordinary meeting, at which Mr. E. Anderson, the chairman, presided.

Guest, Keen and Nettlefolds, Ltd.—At their meeting yesterday, the directors declared an interim dividend for the six months ended December 31st, 1917, at the rate of 5 per cent. per annum on the preference shares, and 1s. per share on the ordinary shares, both free of Income-tax, the same to be paid on February 26th.

British Insulated Cables—Bonus Share Issue.—The directors of the British Insulated and Helsby Cables have decided, subject to the sanction of the Treasury being obtained, to recommend to the shareholders that the company's capital should be increased to such an extent as to enable the issue to be made to the shareholders of one fully-paid ordinary share for each ordinary share held by them.

London and Suburban Traction Company.—Owing to the depletion of staff, the directors state that the accounts for the past year cannot be completed prior to February 15, when a dividend on the preference shares is due to be paid. As soon as possible after that date a notice will be issued announcing the decision of the directors regarding the payment of the dividend on the preference shares on account of the year 1917.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended February 13 amounted to £56,189, an increase of £13,569, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to February 13 (forty-five and a half weeks) the total receipts were £2,511,278, an increase of £353,469 on the corresponding period of 1917.

City of Buenos Ayres Tramways Co., Ltd.—The report just issued shows, for the year ended December 31 last, a net revenue of £67,670, of which £46,500 is absorbed by the interim dividend to September 30, leaving a balance of £21,170. A final dividend of 1s. 3d. per share is now recommended, making 5s. or 5 per cent. in all, less tax, for the year; £5,600 is transferred to the general amortisation fund for the redemption of the share capital, which fund now stands at £62,446 and £70 is carried forward.

Thomas Tilling, Ltd.—The figures relating to this company's trading for the year 1916 have only just been published. The reasons for the delay were explained in a circular issued in April last year. Owing to the greatly increased cost of labour and materials there is a fall in the net profit to £39,014, as compared with £83,392 in the previous year. The dividend on the Ordinary shares is reduced from 12 to 10 per cent., and the extra interest on the income debenture stock from 1⅝ to 1⅛ per cent. The amount carried forward is £28,464 being about £7,000 less than in the preceding twelve months.

An Electrical Amalgamation.—*The Times* learns that the rumours which have been in circulation regarding the acquisition by the General Electric Company of Fraser and Chalmers (Limited) are well founded. Negotiations have been in progress with the object of amalgamating the two businesses, but they have not, we understand, yet reached a stage at which an official statement can be made. Such a fusion would no doubt enlarge the scope of operations of the General Electric Company and its associated enterprises, and might indeed form an important link in the scheme for placing the electrical industry in this country on a footing which would enable it to compete advantageously with foreign manufacturers after the war. Fraser and Chalmers are the well-known manufacturers of mining and other machinery, and have an established connection with the principal mining fields. The company was originally formed to acquire the control of an American company, but in 1901 the American business was disposed of.

London General Omnibus Co., Ltd.—The report for the year ended December 31, 1917, shows that the aggregate gross traffic receipts of the five companies who are parties to the common fund agreement from December 21, 1915, including the London Electric Railway, the City and South London Railway, the Central London Railway, the Metropolitan District Railway, and the Omnibus Company, amounted to £5,843,201. The aggregate gross receipts from all sources were £6,661,862. The amount retained by the five companies for revenue liabilities, including working expenses, prior charges, reserve and other items, was £6,141,526. The balance of £520,336 was credited to the common fund. Under the terms of the agreement, the Omnibus Company is entitled to 32 per cent. of this fund, and accordingly receives £166,507. As the Metropolitan District Railway is under Government control, the total number of passengers carried by the five companies is not given in the report. The following is a summary of the London General Omnibus Company's receipts and expenditure: Gross receipts, £3,401,708 5s. 11d.; expenditure, £2,988,209 17s. 11d.; depreciation of leases, plant, machinery, etc., and reserve for contingencies and renewals, £197,938 12s. 9d. Including the balance brought forward and dividends on investments, there is a disposable sum of £330,302 10s. 5d. Deducting interest on debenture stocks, etc., there is a balance of £187,926. The interim dividend paid in July last required £85,359, and a further dividend of 3 per cent. will absorb £64,019, leaving a balance of £38,547 to be carried forward.

Blackpool and Fleetwood Tramroad Company.—The report for the year ended December 31, 1917, shows that the net earnings for the year, after payment of debenture interest and fixed charges, amounted to £18,409, making, with the balance of £3,749 brought forward, a sum of £22,158. Deducting the interim dividend for the six months ended June 30 at 4½ per cent., which required £3,000, there is a balance of £19,158. This sum the directors recommend should be allocated as follows:—Payment of a final dividend at the rate of 4½ per cent. (making 6½ per cent. for the year), £6,750; to general reserve account, £2,000; to depreciation account, £4,869; writing down value of investments in railway stock, £1,500; carrying forward £4,039. The appended summary gives a comparison of the results of the past four years.

Year ended December 31	1917.	1916.	1915.	1914.
Revenue:	£	£	£	£
Traffic receipts	44,039	42,920,	38,906,	39,138
Other receipts	2,769	2,364,	1,841,	1,363
Total	46,808	45,284	40,747	40,501
Expenditure	25,844	24,471	19,849	21,330
Net Income	20,964	20,813	20,898	19,171
Balance brought forward	3,750	4,250	2,977	3,451
Appropriation from reserve	217	215	5	399
	24,931	25,278	23,880	23,021
Interest, and other fixed charges	2,773	2,773	2,772	2,794
Balance	22,158	22,505	21,108	20,227
Dividend on Ordinary stocks (6½ per cent).	9,750	9,750	9,750	9,750
General reserve account	2,000	1,000	£5,499	2,500
Depreciation reserve account	4,869	5,000	615	5,000
Value of investments	1,500	3,005	994	—
Carried forward	4,039	3,750	4,250	£2,977
Ratio of expenses to receipts	58.69	57.00	51.02	54.50

CONTRACTS AND ORDERS.

Rochdale Town Council has decided to purchase three electric motor wagons.

John Brown and Co., Ltd., have an order from Bradford Tramways Committee for steel tyres, the amount being approximately £2,000.

Electromobile (Leeds), Ltd., have received orders from the Oldham and the Bootle Corporations for a 2-ton and a 3½ ton chassis for electric tipping wagons.

Bradford Tramways Committee has placed an order for the supply of brake shoes with the National Rail and Tramway Appliances Co., Ltd., and with Cole, Marchent and Morley, Ltd.

Manchester Electricity Committee have accepted tenders as follows:—C. Bradshaw and Co., Ltd., two fan draught cooling towers; British-Thomson-Houston Co., Ltd., three 1,050 kw. converters, and extra high-tension switchgear; C. Macintosh and Co., Ltd., W. T. Glover and Co., Ltd., British Insulated and Helsby Cables, Ltd., cable; Bruce, Peebles and Co., Ltd., one 2,000 2,500 and two 500 kw. motor converters.

WANTED.—Copies of the TRAMWAY AND RAILWAY WORLD of January 1 and 13, 1916; March 9, 1916; April 13, 1916; May 11, 1916; June 8, 1916; October 9, 1916; August 16, 1917; and October 18, 1917.—Reply to Box 12, The TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash Feb. 14 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	71½	70¾
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4¾	56/3	56/3
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4¾	46/10½	49/9
4%	4%	Do. 4% Deb.	100	91	67	68½
4½%	4½%	Do. 4½% Deb.	100	98½	69	69
5%	5%	Do. 5% Deb.	100	96	66½	66
—	—	Associated Omnibus Co., Ord. ..	5/-		1/2	1/1½
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88	88
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	101	100
—	1/-	Bath Electric Trams Pref. Ord.	1	¼	3/-	3/
6d.	6d.	Do. 5% Cum. Pref. ..	1	¼	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	70	70
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	20½	20½
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11½	9½	9½
4½%	4½%	Do. 4½% Deb.	100	96	75	75
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	45	45½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	88½	88½
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5½	5½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	77/6
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	90½	90½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	26	29½
6%	5%	Do. Pref. Ord.	100	106	30½	29½
5%	5%	Do. 5% Cum. Pref. ..	100	103	47	45
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	85	85
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	60½	59½
48*	48*	Brit. Elec. Trac. Ord.	100	—	34½	34
6%	6%	Do. 6% Cum. Part. Pref.	100	—	74½	73½
5%	5%	Do. 5% Deb.	100	92	77	77½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	72½	72½
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6½	6½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	81/3
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1	⅛	12/3	12/3
1/3	1/3	City of B. A. Trams	5	5½	80/-	80/-
4%	4%	Do. 4% Deb.	100	97½	69	69
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	85	85
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	80½	80½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7½	7½
6/-	6/-	Do. 6% Pref.	10	12	10⅝	10⅞
—	—	Hastings & Dis. Elec. Tram Ord.	10/-		1/1½	1/1
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1		10/3	10/3
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
1/1½	5½d.	Hong Kong Tramway	5/-		17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	¼	2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co. ..	10	10½	9½	9½
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Deb's.	100	95	79½	78½
9½d.*	9½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
--	1½d.	London & Sub. Traction Ord. ..	1	⅛	2/3	2/3
6d.	6d.	Do. 5% Pref.	1	⅛	6/4½	6/4½
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	61½	61½
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80½	80½
5%	5%	Do. 5% Inc. Deb.	100	88½	78	77½
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	37	37
3/-	3/-	Madras Elec. 6% Pref. ..	5	5⅛	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	86	87½
7½d.%*	9½d.*	Manaos Trams & Ltg. Ord. ..	1	⅛	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	71	71
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	72½	72½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70½	70½
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	28½	28½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	37½	39
—	—	Do. 6% Mt. Bds. ..	100	76	25½	25½
4½%	4½%	Montreal St. 4½% Stg. Dbs. ..	100	100	88½	88½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	⅛	16/-	16/3
9½d.*	9½d.*	New General Traction	1	¼	7/3	7/3
8½d.	6d.	Northern Gen. Trans. Ord. ..	1	⅛	12/9½	12/9½
6/-*	3/-	Para Elec. Rlys. Ord.	5	4½	78/9	80/-
5%	5%	Do. 5% 1st Deb.	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	6/3	5/10½
—	—	Do. 7% Non. Cm. Part Pf.	1	—	13/4½	12/9
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1	⅛	6/8½	6/9
6d.	6d.	Do. 5% Pref.	1	⅛	12/-	12/-
8d.	1/4	Provincial Trams. Ord. ..	1	¼	20/3	20/3
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	81	81
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	87	86½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	75½	75½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86½	86½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	74½	73½
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/⅛	4/7
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	88
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	91½	91½
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77½	77½
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	31/3	31/3
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	66	66
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅛	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅛	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	76½	76½
—	—	Metropolitan Dist. Ord. ..	100	21½	15½	15½
—	—	Undgd. Elec. Rys. of London ..	10	21½	30/-	33/1½
		Do. "A"	1/-	⅛	4/9	5/-
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	102½	103
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	101½	102½
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	80½	81½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

Names.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C. ..	Feb. 5	358	492	+ 134	44	19,932	+ 2,135
Aberdeen Corporation ..	,, 6	1,717	2,315	+ 598	36	78,222	+ 9,553
Ayr Corporation	,, 9	252	329	+ 76	39	18,193	+ 2,312
Belfast City	,, 8	5,256	7,319	+ 2,062	45	297,482	+ 41,490
Birkenhead Corporation	,, 10	1,383	1,886	+ 503	45½	83,179	+ 13,722
Birmingham Corporation	,, 2	15,828	20,058	+ 4,230	44	817,094	+ 116,708
do. Motor Omnibuses ..	,, 2	850	1,174	+ 324	44	47,014	+ 3,770
Blackburn Corporation ..	,, 6	960	1,571	+ 611	45½	67,531	+ 11,857
Bournemouth Corporation	,, 13	1,703	2,396	+ 693	45½	115,771	+ 12,974
Bradford Corporation ..	,, 9	5,922	7,018	+ 1,096	45	344,007	+ 39,762
Burnley Corporation ..	,, 9	1,500	2,023	+ 523	..	..	..
Burton-on-Trent Cor. ..	,, 10	246	386	+ 140	45	14,525	+ 1,956
Bury Corporation	,, 10	1,214	1,551	+ 337	45½	73,893	+ 9,944
Chatham & District ..	,, 7	996	1,163	+ 167	6	5,984	+ 173
Cork Electric	,, 7	419	585	+ 166	6	2,992	+ 553
Derby Corporation ..	,, 9	973	1,251	+ 278	45	54,623	+ 4,452
Dublin United	,, 1	5,660	7,429	+ 1,769	5	32,377	+ 4,984
Dundee City	,, 6	1,300	1,722	+ 422	38½	59,630	+ 6,511
East Ham Corporation ..	,, 9	1,039	1,345	+ 306	45	61,597	+ 4,068
Exeter Corporation ..	,, 8	318	367	+ 49	45	17,924	— 12
Glasgow Corporation ..	,, 9	28,272	26,754	+ 3,482	36½	959,273	+ 106,789
Glossop (U.E. Sup. Co.) ..	,, 9	110	181	+ 71	6	1,050	+ 298
Halifax Corporation ..	,, 7	1,818	2,109	+ 291	44½	108,414	+ 10,837
do. Motor Buses ..	,, 5	45	47	+ 2	44½	2,187	— 23
Hastings and District ..	,, 11	767	927	+ 160	6	5,514	+ 270
Huddersfield Corporation	,, 9	2,499	3,119	+ 620	45	143,756	+ 17,043
Ilford U.D. Council ..	,, 9	570	796	+ 226	45	34,397	+ 4,389
Ipswich Corporation ..	,, 9	367	594	+ 227	45	29,94°	+ 7,409
Isle of Thanet	,, 9	205	200	— 5	19	3,230	— 1,522
Kilmarnock Corporation	,, 9	154	217	+ 63	38½	7,931	+ 1,143
Lanarkshire	,, 7	2,298	3,137	+ 839	6	15,924	+ 2,426
Lancashire United ..	,, 6	1,556	2,574	+ 1,018	6	12,911	+ 3,757
Leeds City	,, 9	9,006	10,830	+ 1,824	45	496,555	+ 56,604
Leicester Corporation ..	,, 9	3,058	4,285	+ 1,227	..	..	..
Leyton U.D. Council ..	,, 7	1,389	1,735	+ 346	45	88,621	+ 11,683
Liverpool Corporation ..	,, 2	13,653	16,688	+ 3,035	45	76,861	+ 10,095
Llandudno & Colwyn Bay	,, 1	255	236	+ 81	9	2,020	+ 303
London County Council	,, 13	42,620	56,189	+ 13,569	45½	2,511,287	+ 353,469
Maidstone Corporation ..	,, 7	158	243	+ 85	45	11,044	+ 1,402
Manchester Corporation	,, 9	16,430	23,081	+ 6,651	45	948,269	+ 108,355
Nelson Corporation ..	,, 9	180	245	+ 65	45	10,651	+ 1,133
Newcastle-on-Tyne Cor.	,, 9	6,619	8,432	+ 1,813	45	355,876	+ 53,326
New St. Helens & Dist. ..	,, 6	889	1,269	+ 380	32	44,669	+ 10,393
Northampton Cor.	,, 8	661	923	+ 262	45	37,996	+ 5,595
Nottingham Corporation	,, 7	3,572	4,740	+ 1,168	45	201,699	+ 26,877
Oldham Corporation ..	,, 10	2,135	2,835	+ 700	46	129,752	+ 18,405
Portsmouth Corporation	,, 9	1,908	2,749	+ 841	..	..	..
Provincial	Jan. 26	1,750	2,479	+ 729	16½	59,274	+ 5,569
Reading Corporation ..	,, 31	761	1,065	+ 304	44	46,596	+ 8,871
Rhondda Tramways	,, 31	1,198	1,652	+ 454	5	6,584	+ 885
Rotherham Corporation	Feb. 13	1,567	2,053	+ 486	46½	83,512	+ 12,158
Salford Corporation ..	,, 11	4,683	6,698	+ 2,015	45½	300,278	+ 56,136
Sheffield Corporation ..	,, 10	10,541	12,933	+ 2,392	46	558,482	+ 71,805
Southampton Cor.	,, 6	1,463	2,242	+ 779	43½	92,708	+ 18,093
Southend-on-Sea Cor. ..	,, 6	578	671	+ 93	45	39,564	— 215
South Shields Cor.	,, 2	801	1,113	+ 312	44	42,484	+ 5,392
Sunderland Corporation..	,, 10	1,497	1,986	+ 489	45	83,764	+ 9,190
Sunderland District ..	,, 6	598	856	+ 258	14	12,033	+ 2,625
Swindon Corporation ..	,, 13	186	292	+ 106	44½	12,497	+ 3,107
Torquay Tramways ..	Jan. 31	358	714	+ 356	5	2,878	+ 640
Tyneside Trys. & Trmrds.	,, 30	603	879	+ 276	5	3,305	+ 669
Wallasey Corporation ..	Feb. 9	1,085	1,430	+ 345	45½	70,537	+ 9,498
Walsall Corporation ..	,, 9	729	1,112	+ 383	45	45,121	+ 8,191
Walthamstow U.D. Coun.	,, 9	872	1,170	+ 298	45	54,914	+ 6,708
Warrington Corporation	Jan. 17	497	709	+ 212	42	24,208	+ 3,477
West Ham Corporation	Feb. 7	2,719	3,551	+ 832	44½	163,600	+ 20,543
Wigan Corporation ..	,, 7	1,519	2,240	+ 721	45	91,701	+ 15,823
Yorkshire (West Riding)	,, 10	1,827	2,564	+ 737	6	13,744	+ 3,065

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

Name.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Feb. 11	£50,673	£55,428	6	£315,463	+ £18,227
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Dec. 2	3,090	3,179	36	28,844	+ 214
Brazilian Traction (Mlrs.)	Dec.	7,312,000	8,069,000	52	92,200,000	+ 7,315,000
Brisbane	Dec.	32,910	35,019	52	396,339	+ 6,269
British Columbia .. $	Dec.	496,959	555,555	26	2,923,660	+ 258,275
Buenos Aires Lacroze ..	Jan.	38,142	38,902	30	269,377	— 340
Burmah Tram. & Light Rs.	Dec.	32,551	26,224	21	135,822	+ 1,483
Calcutta .. .. Rs.	Feb. 9	68,055	72,205	6	420,792	+ 11,648
Cape Town	Dec.	..	19,803	..	..	..
Carthagena and Herrerias	Jan.	3,992	4,011	4	4,011	+ 29
Cordoba	Nov.	12,836	13,339	34	108,715	— 2,137
East India	Jan.	1,836	1,176	26	7,449	— 5,574
Hong Kong .. .. $	Dec. 15	12,277	11,762	50	671,409	— 39,516
Kalgoorlie	Sept.	2,788	3,063	39	24,128	+ 861
La Plata	Jan.	4,315	4,711	4	4,711	+ 396
Lima	Dec.	37,171	41,697	52	438,895	+ 30,725
Lisbon .. .. Escu.	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Jan. 15	36,493	37,736	2	37,736	+ 1,243
Manila .. .. .. $	June	59,432	73,900	..	..	..
Manaos	Oct.	..	158,078	..	..	..
Montevideo	Jan.	33,341	36,016	13	101,101	+ 7,992
Pernambuco	Feb. 10	3,441	4,759	6	28,264	+ 6,954
Peruvian .. .. $	Jan.	935,130	1,189,350	30	7,277,620	+ 836,993
Port Elizabeth	Dec.	..	4,920	..	..	..
Rangoon	Jan.	4,633	5,361	4	5,361	+ 728
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Dec. 15	13,297	12,548	50	643,405	+ 11,654
Toronto .. .. $	Nov.	911,829	1,052,000	47	10,986,998	+ 1,161,954
Winnipeg .. .. $	Nov.	282,899	305,881	47	3,039,397	+ 16,227

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THE

Tramway & Railway World

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

PORTSMOUTH CORPORATION TRAMWAYS COMMITTEE.

Tenders for Supplies.

The Tramways Committee of the above Corporation invite Tenders for the supply of the undermentioned goods from April 1st, 1918, to September 30th, 1918:—

Section A.—Ballast, Sand and Grit.
Section B.—Portland Cement (British manufacture preferred).
Section C.—Brooms and Brushes.
Section D.—Oils (not lubricating), Chemicals, Sheet Glass, etc.
Section E.—Smith's Coal and Coke.
Section F.—Timber.
Section H.—Brake Blocks.
Section I.—Engine Packings, Asbestos Goods, etc.
Section J.—General Ironmongery.
Section P.—Car Repair Stores.
Section Q.—Insulating Materials, Lamps, and Motor Windings.
Section R.—Overhead Line Materials.
Section S.—Lubricating Oils, Greases, etc.
Section T.—Chandlery, etc.
Section U.—Castings and Machined Parts.

The Specification and form of Tender may be obtained upon application to the Engineer, Mr. V. G. Lironi, M.I.M.E., A.M.I.E.E., Engineer's Office, Vivash Road, Fratton, Portsmouth.

Tenders marked "Tender for————" to be delivered to the Town Clerk Town Hall, Portsmouth, not later than 10 a.m. on Tuesday, March 12th, 1918.

The form of Tender must include a declaration that the person making the Tender pays the rate of wages and observes the hours of labour and conditions contained in the Corporation Fair Wages Clause.

The Committee do not bind themselves to accept the lowest or any Tender.

W. R. SPAVEN.
General Manager.

Town Hall, Portsmouth,
February 19th, 1918.

PORTSMOUTH CORPORATION TRAMWAYS.

Contract.

The Tramways Committee invite Tenders for the supply and delivery of

180 Women Conductors' Mackintoshes.

Specification and Conditions and Form of Tender may be obtained, and sample seen, on application to the General Manager, Town Hall, Portsmouth.

Sealed Tenders, endorsed "Tenders for Mackintoshes," to be delivered to the undersigned at the Town Hall, Portsmouth, not later than 12 noon, Monday, 11th March, 1918.

The Committee do not undertake to accept the lowest or any Tender, and reserve the right to accept the whole or any portion of any Tender.

W. R. SPAVEN,
General Manager.

Town Hall, Portsmouth.
21st February, 1918.

CITY OF GLOUCESTER.

Electrically Propelled Chassis.

The Electricity and Light Railways Committee is prepared to receive Tenders for one 2-ton Electrically propelled Chassis, upon which to mount tower of an existing wagon.

Offers to be addressed to the Chairman, Light Railways Offices, Bristol Road, Gloucester, not later than March 5th, 1918.

CITY OF LINCOLN TRAMWAY DEPARTMENT.

Trailers.

The above department desire to purchase a couple of Trailers for their 4′ 8½″ standard gauge system, and will be glad to consider offers for any type of vehicle provided it is not electrically equipped.

POSITIONS VACANT.

LIVERPOOL CORPORATION TRAMWAYS.

Deputy General Manager.

The Council of the City of Liverpool invite applications for the appointment of Deputy General Manager of the Tramways Undertaking.

The person to be appointed must possess expert knowledge of traffic management, and also have engineering experience in all branches of work connected with the building and maintenance of electrical tramway rolling stock and overhead equipment. He will be required to devote his whole time and attention to the duties of the office, and will be prohibited from engaging in any other business or employment whatever.

Salary £800 per annum; the engagement to be determinable by three calendar months' notice, to expire on the last day of any calendar month, and to be subject (if the Council so determine) to the Superannuation provisions of the Liverpool Corporation Act, 1913.

The person appointed will be required to sign an agreement to the effect that he holds the office subject to compliance by him with the Standing Orders of the Council.

A statement of the principal duties of the position will be forwarded upon application to the General Manager of the Liverpool Corporation Tramways, 24, Hatton Garden, Liverpool.

Applications, stating age, qualifications, and previous appointments, accompanied by copies of not more than three testimonials, and endorsed "Deputy General Manager," must be sent to the Town Clerk, Municipal Offices, Liverpool, not later than 5 o'clock on the 25th February, 1918.

Canvassing of Members of the Council will be a disqualification, but candidates may send copies of their applications and testimonials to Members of the Council.

EDWARD R. PICKMERE,
Town Clerk.

Town Clerk's Office, Liverpool.
February 8, 1918.

COUNTY BOROUGH OF SUNDERLAND.

Wanted immediately, Engineer, with modern central station, steam and electrical experience, to take charge of seven eight-hour shifts per week.

Commencing salary, including all bonuses to date, at the rate of £195 19s. 6d. per annum.

Apply in own handwriting, enclosing copies of recent testimonials, and stating how soon after appointment duties could be taken up, to

ALFRED S. BLACKMAN,
Engineer and General Manager.

Electricity Offices.
Dunning Street, Sunderland.

INSPECTOR FOR MOTOR OMNIBUS SERVICES.

Inspectors wanted for Motor 'Bus Services. Knowledge of running repairs necessary. Ineligible Army. State qualifications and wages required, Age 24-45. Tramways Company, Oxford.

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OF EVERY DESCRIPTION.

SAND OR DIE—2 h.p. to 600 h.p.

ROBERT W. COAN,

Telegrams: KRANKASES, ISLING, LONDON. | 219, COSWELL RD., LONDON, E.C. | Telephones: 3846 CITY. 4879 CENTRAL

TRAMWAY SUPPLIES, Ltd.

Tramway Engineers,

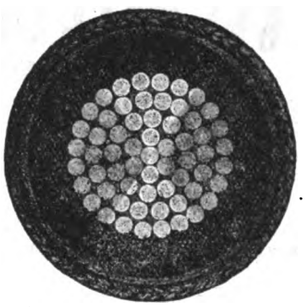
OVERHEAD LINE MATERIALS AND SUPPLIES.

Sole Manufacturers of

TURNER'S PATENT AUTOMATIC POINT CONTROLLERS.

Telegrams: "Controllers, Leeds." Telephone: 3488 Leeds.

160, WOODHOUSE LANE, LEEDS.

1837.  1918.

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are up-to-date in method, material and manufacture. To ask us to quote you, places you under no obligation and may prove to your advantage.

W. T. HENLEY'S TELEGRAPH WORKS COMPANY, LIMITED, Blomfield Street, LONDON, E.C.

ROLLING STOCK SPECIALITIES.

OUR RATTAN

(NATURAL, GLAZE, DULL FINISH, OR COLOURED) in twill, straight, or fancy weaves, canvas backed or unbacked, is

BRITISH MADE THROUGHOUT

from the splitting of the cane to the finished article.

We hold **LARGE STOCKS OF RAW MATERIALS** and can GUARANTEE PROMPT DELIVERIES.

Particulars of other **BRITISH SPECIALITIES** *upon application.*

THE GENERAL SEATING COMPANY, LTD.

13, CITY ROAD, LONDON, E.C.

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THE
Tramway AND Railway World

Established in 1892 and Published by

THE TRAMWAY & RAILWAY WORLD PUBLISHING CO., Ltd., AMBERLEY HOUSE, NORFOLK STREET, LONDON, W.C.

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SUBSCRIPTION.

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SATURDAY, FEBRUARY 23, 1918.

"SAFETY FIRST."

The idea of systematically impressing upon the minds of employees of passenger-carrying undertakings the paramount necessity of exercising care in the discharge of their duties, of avoiding needless risks, and thus promoting working efficiency in its highest and, indeed, only sense, had its origin on the other side of the Atlantic. In fact, that terse and significant injunction "Safety First" has a way in the States of making its appearance in all sorts of unexpected places—and is all the more effective in consequence. That the opportune display of those two all-sufficing words, and all that they imply, has been the means of saving tens of thousands of lives is now generally acknowledged. So far, therefore, as the adoption in this country of this obvious and simple resource for avoiding accidents is concerned, the one cause for surprise is that it was so long in finding its way over here. It is to the Great Western Railway that pioneering honours in this respect belong, and although the example thus set has been fairly widely followed by other British undertakings of various kinds, it is not utilised on anything like so large a scale as might very beneficially be the case. It may be urged, perhaps, that we are inherently more cautious than our American friends, and thus do not need these adventitious reminders to take care; but at the same time it can hardly be pretended that we have reached such a stage of perfection in these matters that no improvement is possible.

That the principle that underlies these words "Safety First" is truly practical, with visible and notable effects, and is not a mere theory having no tangible result, would, even in the absence of the mass of other evidence that is available, be clearly apparent from the facts set forth in the first annual report of the London Safety First Council, established just over fourteen months ago. When one considers the difficulty in setting up any new organisation, or in securing an interest in any question not directly relating to the prosecution of the war, the record of things attempted and done to which it testifies is as noteworthy as it is valuable. The Council owes its first inception to Mr. H. E. Blain, well known as the Operating Manager of the London General Omnibus Company and Underground Railways, and was a more or less obvious development of the "Safety First" campaign conducted by the Omnibus Company among its employees during 1916. The effect of it was that in that year there was a reduction of more than 22 per cent. in the number of omnibus accidents as compared with the previous twelve months. Mr. Blain therefore felt that a much wider extension of this movement would be of the utmost benefit to the community, and could be effected through the medium of a fully representative public body. Thus it was that the London "Safety First" Council came to be formed, and in due course the necessary organisation was at work, and funds provided.

Its objects were defined under three separate heads, but of these the second may be said substantially to state the essential purpose, *i.e.* the organisation of street traffic with a view to the greatest public safety and efficiency. This clearly involves means of educating and instructing the public in general and drivers of all classes of vehicles in particular, and the manner in which these tasks has been dealt with is now becoming fairly well known to most of those who live in the Metropolis, so thorough and appropriate has been the propaganda and publicity work that has been carried out. Nevertheless, it has to be remembered that the end and aim of all this effort is result. Full statistics relating to street accidents in 1917 have not yet been published, but comparative figures of the first nine months of 1916—immediately before the Council was established—of deaths and injuries in London streets show that in 1916 there were 577 persons killed and 34,575 cases of injury; for the same period of 1917, the corresponding figures are 489 and 27,960, or a reduction of 15·26 and 19·14 per cent. respectively. To some extent this improvement must, of course, be attributed to the fact that last year considerable improvement was made in the lighting of the streets as compared with the very severe curtailment during 1916. It was, however, on the direct suggestion of the Council that many of the safety devices that were gradually introduced came to be adopted. This being the case, in conjunction with the general effect of its endeavours, the London "Safety First" is certainly entitled to hearty congratulation on its achievements.

BOARD OF TRADE TRAMWAYS COMMITTEE.

District Advisory Committees Appointed.

As mentioned in our issue of February 16, the Tramways (Board of Trade) Committee arranged a series of meetings in the nine different districts into which Great Britain has been divided for the purpose of the Committee's work. These meetings were held in order to give the Committee the opportunity to explain to representatives of the tramway undertakings in the various districts, the aims and objects of the Committee and to arrange for the constitution of local advisory committees. The first meeting was held in the Council Chambers, Glasgow, on Monday, February 18, when over 40 representatives of Scottish tramway undertakings attended. The members of the Board of Trade Tramways Committee present included Mr. James Devonshire (chairman), who presided; Mr. A. L. C. Fell, general manager of London County Council Tramways; and Mr. James Dalrymple, general manager of Glasgow Corporation Tramways.

From a statement made to the Press at the close of the proceedings, which were private, it appears that Mr. Devonshire pointed out to the meeting that it was in the national interest that an advisory committee should be appointed to co-operate with the Board of Trade Committee in matters affecting Scotland. He indicated various points that would arise in carrying out the work, including the increase of fares through the abolition of the halfpenny fare

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rates for conveyance of parcels and goods, the better utilisation of tramcars in the distribution of food, the labour problem, and the transference of material and equipment. For the advisory committee he suggested the appointment of one member, perhaps the manager, of each tramways undertaking.

A general discussion took place, in the course of which the substitution of women for male drivers was generally conceded to be satisfactory. Only in one case, that of Paisley, was it stated that women drivers had not been a success.

Mr. Montgomery, chairman of Glasgow Tramways Committee, suggested that where matters of policy were to be considered it might be better to have a representative of the tramways committee on the advisory committee as well as the general manager. He stated that in Glasgow representations had been made with a view to having the stopping times at works varied, and to have shopping done by ladies at times that would ease the congestion of car traffic, but with very little success.

Mr. Fell, in replying to the discussion, said that whenever a matter of policy was raised, such as the suggested closing of a route or portion of a route and the subsequent lifting of the rails for transference to other sections, a local inquiry would first be held, and the opinion of the local tramway committee or concern would be invited.

Councillor Montgomery accepted that explanation as satisfactory.

It was agreed to appoint an advisory committee, consisting of one representative from each tramway concern, and Major Coutts, general manager of Paisley Tramways Company, was appointed honorary secretary.

Mr. Dalrymple, in a concluding statement, said they must always consider that the country must come first at this crisis. Matters would have to be very serious before they took the extreme step of closing an undertaking. At the same time, some of them might have to close particular routes or part of routes, and possibly might have to lift the rails on these routes. In the central parts of Glasgow the track was getting into a very bad condition, and in a short time they would have to lift portions of the non-essential routes in order to keep the essential routes working. That would be the easiest way out of the difficulty, but it might not suit every place to adopt that method.

On the invitation of the Lord Provost of Glasgow and the members of the Tramway Committee of that city, those present were entertained to luncheon in the City Chambers.

Immediately after luncheon, the representatives again met, with Mr. Fell in the Chair. The first business done was to decide as to where the Committee should meet when called together, and, as both Stirling and Glasgow were proposed, a vote was taken and resulted in the former, it being considered more central than Glasgow. The meeting then decided to group the various undertakings under three divisions, northern, eastern, and western. A general feeling was expressed that if any undertaking had any surplus material whatever, even although obsolete, they might acquaint the Secretary of the fact, giving all details, as what might be scrap to one place, might be found very useful to another still using an older or different type of equipment. Advice might also be sent to the Secretary of any surplus rolling stock that any undertaking could possibly spare, giving details of gauge, wheel-base, total length of car, whether covered deck or open type or single deck, whether swivel trolley, and also if trolley in centre or side of car, and such other information as is necessary to enable the Committee to decide as to whether a car could suitably be adapted to run on an undertaking in want of increased rolling stock. The Northern Division will have Mr. Pilcher, of the Aberdeen Corporation, as its honorary secretary; the Eastern Division, Mr. Fitzpayne, of Leith; and the Western Division, Major Coutts, of Paisley.

MEETING AT NEWCASTLE.

The second meeting, which was for the northern district of England, was held in Newcastle on February 19, when the same members of the National Committee attended, together with representatives of the tramway undertaking in Newcastle and neighbourhood.

Mr. Devonshire, in explaining the objects of the meeting, said that they wanted to regard the whole of the tramway interests as being one large undertaking, and give up all selfish ideas they had held in the past, so as to make one pool, into which all of them could dip. In order to do this, it was desirable to set up a local advisory committee. If the war lasted much longer, the dearth of material, to say nothing of labour, would be very marked indeed, and it was necessary to see that their undertakings were as far as possible maintained. In the South, at many factories, changes in the hours of labour had been made both in the mornings and at nights, and these had been of immense benefit to the tramway services. Another benefit would accrue if ladies, who went shopping, arranged to do this at times when the cars were not used by the workers.

Mr. Dalrymple said that in Scotland the majority of drivers were women now. He did not know how they would have got on without the women, first as conductors and then as drivers. They had done magnificently. He thought that more women could be used as drivers.

On the motion of Mr. R. Mayne, chairman of Newcastle Tramways Committee, seconded by Mr. J. S. Hilton, of Gateshead Tramways Company, it was decided to appoint a local advisory committee; and Mr. George A. Carr, Newcastle Tramways staff, was appointed hon. secretary.

Mr. Ernest Hatton, general manager of Newcastle Corporation Tramways, in the course of discussion, said for three years they had tried to get the great armament firms of the district to alter the hours of labour, as it would assist the tramway service very materially. They had secured relief from the fact that many women workers did not start in the mornings at the same time as the men. He also intimated that they would be glad to obtain material for maintenance, as a number of their cars were out of service, simply because they could not get materials for repairs.

YORKSHIRE AND LINCOLNSHIRE DISTRICT.

On Wednesday representatives of the Board of Trade Committee met representatives from the Yorkshire and District tramways at the Council Chamber, Guildhall, York. Mr. James Devonshire presided, and was supported by Mr. A. R. Fearnley and Mr. R. J. Howley. Mr. Devonshire gave an explanation of the duties and powers of the Committee, and his remarks were supplemented by Messrs. Fearnley and Howley. It was unanimously resolved to form an advisory committee for the area, the committee to consist of an officer from each undertaking. Mr. H. England, general manager of the Yorkshire (West Riding) Electric Tramways, was appointed honorary secretary.

THE LANCASHIRE, CHESHIRE AND WALES DISTRICT.

Representatives of the Committee met delegates from thirty-two tramway authorities in Lancashire and Cheshire at Liverpool on Thursday. Mr. James Devonshire, chairman of the Board of Trade Committee, presided, and was accompanied by Mr. A. R. Fearnley, general manager of Sheffield Corporation tramways, and Mr. J. Dalrymple, general manager of Glasgow Corporation tramways.

The Chairman assured the gathering that it was not the intention to control Tramways undertakings, but on the contrary to relieve them of as many of their difficulties and perplexities as possible. Each of the areas was to be in charge of an advisory committee elected by the undertakings themselves, and to have charge of such questions as labour, rails, permanent way, rolling stock, and car equipment, and priority for material. On the subject of labour he said he had been astonished in Glasgow to find that 92 per cent. of the tramways employees were women and that the women drivers in particular performed their work with striking excellence. He hoped all authorities would now conduct all negotiations for Tribunal exemptions through the Board of Trade Committee, which had been given a seat on the Ministry of National Service in order to look after tramway interests. It was essential that their representative should be a good fighter, for he was assured that there was a regular scramble for men on the part of every trade when priority questions came to be considered.

Speaking of the greater utilisation of tramways services, Mr. Devonshire suggested local authorities should endeavour to arrange that large works should open at varying times, say one at 6 a.m., another at 6.10, another at 6.20, and another at 6.30, instead of four at 6 o'clock. The relief to tramways by such a system was enormous. It had been adopted around London and at Woolwich Arsenal, and the chairman of the London Highways Committee had assured him that since the alteration the cars were able to carry three times as many workpeople. Another way in which relief might be obtained was to ask ladies to finish their shopping before 5 p.m., but he doubted whether the same measure of success could be attained in that direction. It was worth while attempting, for after a long day, workpeople were not in the mood to wait for cars.

In regard to material some tramways authorities were "hoarders" and would have to be talked to severely. There was a hope that some rails would be allowed to be rolled, supplies from America having failed them, and they would have to be allotted impartially. No concern not really needing them would be allowed to have them. It would not be possible to purchase new cars. Indeed, it was quite possible that the Board of Trade would have to determine which undertakings should perhaps be wholly or partly discontinued in order that material might be transferred to other undertakings of great importance. In regard to non-essential routes the Ministry of Munitions had already made a complete survey of the tramways of the country, and if it became necessary to declare any non-essential he hoped the tramways owners would render assistance so as to avoid waste of time.

In a discussion as to constitution of the advisory committee of the area, Mr. Russell Taylor (Liverpool) advocated a separate committee for Merseyside on account of the huge naval and military demands put upon the district. This was, however, rejected by an overwhelming vote, and the meeting decided that the area committee should consist of one representative from each tramways authority.

Alderman Fletcher (Wigan) said if each district was to advocate its own claims he could quote the Manchester tramways manager as authority for the assertion that car overcrowding was worse in Wigan than any other place in the United Kingdom. There was nothing like it outside the United States.

Alderman F. Smith (Liverpool) suggested that the scheme would heap up the officials until they did not know where they were.

Councillor Day (Manchester) asked whether in the event of the curtailment of service in one town for the benefit of another town there woud be an attempt to adjust the financial loss ensuing.

The Chairman replied that one of the functions of the advisory committee would be to advise as to the amount of compensation payable in respect of loss of revenue involved by reduction of service or closing of routes.

Mr. J. Barnard (Bolton) was appointed honorary secretary for the area.

Summer Time.—In the House of Commons on Tuesday, Sir George Cave announced that summer time had been fixed to begin on Sunday, March 24, and would continue until Sunday, September 29.

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L.C.C. TRAMWAY MATTERS.

At the fortnightly meeting of the London County Council on Tuesday, few tramway matters of importance were dealt with.

POSITION OF OPERATION SUPERINTENDENT.

The scheme approved by the Council on February 20, 1917, for the reorganisation of the tramways department provided for the appointment of an operation superintendent in the traffic branch of the department to carry out the work of traffic operation, including the direction of the operating staff. Applications for the position were invited by public advertisement in April, 1917, but it was subsequently decided that no appointment should be made. The Highways Committee now reported that war conditions have restricted materially the field of choice of suitable candidates, and they considered that the salary offered was insufficient to attract suitable persons having the necessary qualifications. The salary orginally assigned to the position was from £500 to £700 a year, and on the recommendation of the Highways Committee the Council agreed that the Highways Committee should be authorised to recommend an appointment to the position at a higher figure, the minimum salary to be £600, increasing by four annual increments of £50 to £800 a year.

DIVISIONAL SUPERINTENDENTS.

In the organisation of the tramways department the minimum salary assigned to each of the two positions of divisional superintendents (Traffic Branch) was fixed at from £300 a year, increasing by annual increments of £25 to £400. Mr. E. Cloney, district traffic superintendent (northern section), has acted in his present capacity since October, 1906, and the Highways Committee recommended that he should be promoted to the position of divisional superintendent in the traffic branch of the tramways department at a commencing salary of £325, rising by annual increments of £25 to £400 a year. The Highways Committee reported that Mr. J. Terry, district traffic superintendent (southern section), had attained the age of 65 years, but his retirement would cause inconvenience to the public service, and they recommended that he should be retained up to and including March 2, 1919.

CLAIM FOR COMPENSATION.

On April 5, 1917, a motor-omnibus of the London General Omnibus Company ran into four men who were engaged in cleaning tramway conduits in Upper Tooting Road, one of the men being killed. A claim for compensation under the Workmen's Compensation Act was made against the Council by the dependants of the deceased, and a sum of £268 18s. 3d. was paid into the County Court in settlement of the claim. Two other workmen sustained injuries as a result of the accident, and one of them has recovered damages from the company. The company was asked to indemnify the Council in respect of compensation paid to the dependants of the man who was killed, but has repudiated liability. The Council approved the recommendation of the Highways Committee that proceedings should be instituted in the High Court against the Omnibus Company for the recovery of the compensation paid by the Council.

FEES OF MEDICAL ADVISERS.

The services of Dr. R. J. Swan, Dr. P. Dunn and Dr. H. F. Stokes are retained for the purpose of medical examinations in connection with claims arising from tramway accidents. Each receives a retaining fee of £42 a year, 10s. 6d. for each examination within the County of London, £2 2s. for each attendance at court to give evidence, and a special fee based upon the distance and the time involved for each examination outside the County of London. A request for some additional payment has been made by two of the doctors, and in view of the increased cost of railway travelling, petrol, tyres, oil, etc., the Highways Committee recommended that the retaining fee should be increased by twenty guineas, such increase to be limited to the duration of the war and six months thereafter.

WAGES IN ELECTRICAL AND OTHER BRANCHES.

From the beginning of the first full week in December, 1917, persons employed on the operative staff of the power station and sub-stations receiving war wages of 15s. a week were granted in lieu thereof war wages of 20s. a week. The benefit of this advance has been extended by other municipal electrical undertakings to persons engaged on cable repairs and maintenance, and the Highways Committee now recommend that the same course should be followed in regard to the tramway employees. The men in question are leading cable hands, cable hands, overhead linesmen and feeder pillar hands.

WAGES OF PUNCH MAKERS AND REPAIRERS.

The Minister of Munitions has intimated that men of this class who satisfy all the conditions of skilled time workers (Engineers and Moulders Order, 1917) are entitled to the advance of 12½ per cent. on earnings specified in the Order. As punch makers and repairers satisfy these conditions, they are to be regarded as coming within the terms of the resolution authorising the payment of the bonus to skilled engineers and moulders in the tramways department.

TRAMWAYS (BOARD OF TRADE) COMMITTEE.

The General Purposes Committee reported that they had received a circular letter from the Tramways (Board of Trade) Committee, dated January 29, giving particulars of the terms of reference and the duties of the Committee, and explaining the division of the country into areas to be placed under area sub-committees. The letter stated also that London is included in area No. 1, and the first meeting of representatives of tramway undertakings in that area will be held in London on February 27. The Council was asked to appoint at least two representatives. The Board of Trade Committee intimated that they would prefer that the local advisory committee should consist of tramway managers and engineers, as they would probably be better able to furnish the technical assistance required. On the understanding that the Council was not in any way committed as to its policy, Mr. G. H. Hume, chairman of the Highways Committee, Mr. A. H. Scott, vice-chairman, and Mr. J. K. Bruce, traffic manager, were appointed to represent the Council at the forthcoming meeting.

Mr. J. D. Gilbert, M.P., in some remarks on the extension of the Board of Trade Committee's powers, said that he was very anxious to have some assurance from the chairman of the Highways Committee that, although they sent representatives, it was quite understood that they would have no power to agree to the closing down of any section of the London County Council tramways. Personally, he viewed with very great alarm the objects of the Committee, and urged that they should have some definite pledge that before their representatives agreed to anything of that sort being done, a full report should be brought before the Council.

Mr. G. H. Hume, chairman of the Highways Committee, said that the Committee shared Mr. Gilbert's anxiety as to the scope which had been given to this Committee's operations. They had come to the conclusion that, under the circumstances, opposition was of very little use; but it was necessary to see that their view was thoroughly presented, and they were considerably protected by having their general manager on the Committee itself. If serious proposals were made with regard to London, the Highways Committee would lose no time in coming to the Council.

Replying to a question by Alderman W. Hunt, J.P., Mr. G. H. Hume said that it was impracticable to submit weekly traffic returns in a form which would show the net return. Information even of an approximate kind as to expenditure would involve a great deal of work that could not be undertaken under war conditions. Such information would in any case be misleading, as the expenditure chargeable to a particular period could not be ascertained with any degree of accuracy so quickly as the traffic receipts.

In reply to a question by Mr. J. D. Gilbert, M.P., with regard to arrangements on air raid nights, Mr. Hume said that the cars would continue to run, subject to the conditions set out in the order issued by the Field-Marshal Commander-in-Chief of the Home Forces, until anti-aircraft gunfire is heard in the vicinity. After this has stopped, the cars again proceed. If passengers rejoin the cars which they have temporarily left, their tickets are considered valid. Every effort is made after normal hours of working to meet such requirements as may arise.

WAGES AND WAR BONUSES.

At a meeting of the Cardiff Tramways Committee on Tuesday, February 19, Sir John Courtis said that only a few days after the award of the Committee on Production had been given, the Tramway and Vehicle Workers' Association applied for a further increase of 4s. a week. The cost of living now was not higher than at the date of the last award, and it was for the applicants to justify the demand following so quickly upon the previous award. It was decided that if no agreement could be arrived at, the matter should be referred to the Committee on Production.

As a sequel to the recent demands by Dundee tramway employees for increases of wages, a strike was suddenly declared on Friday of last week, the service being held up for about two hours in the middle of the day. After negotiations between the Lord Provost and a deputation of the men, a promise was made that their grievances would be investigated, and the service was resumed. It is understood that the complaints relate mainly to alleged anomalies in the treatment of certain classes of men as compared with others, rather than to the general rate of pay.

The Committee on Production and Special Arbitration Tribunal have decided that employees of the Torquay Tramway Co., Ltd., shall receive 16s. per week over their pre-war wages as from the first full pay in January, 1918. The women concerned shall receive as from the same date 5s. per week over their present wages.

Amongst various recommendations by the General Purposes Committee of the London County Council as to expenditure to be authorised in respect of war bonuses to staffs for the period January 1 to March 31, 1918, is that of £6,450 for tramway service.

MUNICIPAL TRAMWAYS AND THE WAGES QUESTION.

A private meeting of representatives of a large number of municipal tramways was held on February 15 at the Surveyors' Institution, London, S.W., to consider the demands put forward by the National Transport Federation for an increase of 20s. over pre-war wages for all tramway and omnibus employees. The present statutory limitation of tramway fares was also discussed. The meeting was attended by representatives from all the leading undertakings, and the questions were, we understand, considered at some length, but no definite conclusion appears to have been reached. It was suggested that councils should be set up under the scheme proposed in the Whitley report on a national basis. An alternative proposal was made that district councils should be organised. It was finally resolved that in the opinion of the conference it was impracticable to deal with all questions affecting tramway employees on a national basis, but that the conference was prepared to deal with them in zones, groups of towns being geographically arranged. It was agreed that a committee should be appointed to bring up the scheme to an adjourned meeting to be convened in the same way.

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"UNDERGROUND" GROUP EFFICIENCY MEETINGS

STAFF CATERING.

The fifth Operating Department Efficiency meeting of the current season was held at the L.G.O.C. Training School, Milman's Street, Chelsea, S.W., on February 13, Mr. H. E. Blain, operating manager, presiding over an attendance of nearly two hundred members of the administrative and control staffs. A paper on "Staff Catering" was read by Mr. E. C. Rodway, Assistant to the Superintendent of catering, who described the catering organisation in connection with both the omnibus company and the railway companies. The former had twenty-four mess rooms, the first of which was opened on March 10, 1913, and the latest on January 11 last. There were five mess rooms on the railways. The facilities were divided into three main grades: (*a*) Institutes erected at garages and stations, which included a mess room, a billiard room, and reading room—full catering being provided; (*b*) Mess rooms at omnibus terminal points, usually being small shops or temporary buildings, where full catering was also provided; and (*c*) Light refreshment rooms at some of the 'bus terminal points, where light refreshments were provided. The staff organisation consisted of a superintendent and an assistant-superintendent of catering, and a staff of over two hundred stewards, stewardesses, cooks, counter-hands, general hands and cleaners. This staff wore a standard uniform, the male staff wearing white coat and apron, and the female staff a black dress and white apron, the companies defraying cost of washing.

Difficulties in connection with the staff personnel under war conditions were referred to, and a review given of the mess room working for the past three years, during which the transactions had greatly increased, the record for 1917 being, approximately 4½ millions. He then proceeded to describe the catering organisation and to give details of different food values, the study of which is of great importance in the present condition of food regulations. Mr. Rodway made a number of suggestions for development of the catering operations, and made it clear from comparison of food prices, the great benefit derived by the employees from arrangements which supplied them with good reliable food at the cost of its purchase and serving, the companies bearing all expenditure in connection with buildings, maintenance, equipment, and power for cooking. The discussion which followed was of an exceptionally practical and interesting character, and was opened by Mr. E. Yorke, divisional inspector, Tube Railways; Mr. E. A. Gleaves, operating foreman, L.G.O.C., and Mr. F. Rolls, assistant-divisional inspector, L.G.O.C. Many suggestions were made which were worthy of full consideration, the evening being one of the most helpful of the series.

MISCELLANEOUS NEWS AND NOTES.

Southport Tramways Committee have recommended an increase of all tramway fares by ½d. per journey, proportionate increases in return tickets, and reduced fare tickets for children.

Electric Motor Cars.—Mr. Wardle, Parliamentary Secretary of the Board of Trade, in reply to a question of the House of Commons on February 18, said that there was at present no intention to issue regulations as to the consumption of electricity in motor vehicles.

New Dunfermline to Rosyth Tramway.—This extension of the Dunfermline and District system is expected to be open for traffic in the course of a few weeks. Work was commenced on this route, which has been constructed at the special request of the Admiralty, in September last.

Yorkshire Electric Power Bill.—At a special meeting on Monday last the Doncaster Corporation unanimously decided to oppose the Bill now being promoted by the Yorkshire Electric Power Co. Similar decisions have already been arrived at by the Barnsley Town Council and by a conference of West Riding local authorities.

Tramway Workers' Amalgamation.—The Tramway Workers' Association and the London and Provincial Union of Licensed Vehicle Workers have been negotiating for some time with a view to an amalgamation of the two unions. It is reported that the proposals have now reached the stage at which they can be placed before the members for discussion.

Fewer Stops at Swansea.—As the outcome of an agreement between the Borough Surveyor, the Chief Constable and the Tramways Manager, a drastic rearrangement of stopping places on the Swansea Tramways system is to be made. The number of stops on the "down" line is to be reduced by eight, while on the "up" of the Brynmill section, eleven are to be abolished.

Depreciation of Machinery.—Replying to a question in the House of Commons on Monday, Mr. Bonar Law said that the income-tax allowance in respect of the depreciation of machinery and plant fell to be determined not by the Commissioners of Inland Revenue, but by the respective bodies of Income Tax Commissioners, upon whom it devolved to allow such deductions as they thought reasonable

Speed v. Schedule at Newport.—In a case in which a driver had been summoned for exceeding a Board of Trade limit of four miles an hour, Mr. Nicholas Moore, the Newport borough electrical engineer, was somewhat closely cross-examined by the solicitors for the defence. It was sought to show that the Corporation's schedule time of twelve minutes over a distance in which there were nineteen stopping places was insufficient. The drivers were, therefore, between "the devil and the deep sea"—the scheduled time of the Corporation on the one hand, and the Board of Trade regulation on the other. The magistrates convicted, inposing a fine of 10s., but said that if drivers were late in arriving at the terminus, the Tramways Committee should enquire whether the time allowed was adequate.

Liverpool Fares to be Increased.—The Finance Committee of Liverpool Corporation have resolved, in order to provide for the increased expenditure and for the prospective further increase in the cost of working and maintaining the tramway service, to recommend that the Tramways and Electric Power and Lighting Committee prepare and submit a scheme for the revision of fares.

Free Travelling Facilities to Purchasers of Tank War Bonds.—London is again to be visited by tanks for the sale of National War Bonds, and the London County Council, with a view to encourage the purchase of the bonds, have decided that from March 4 to 8 persons boarding the cars at any part of the Victoria Embankment between 10.30 a.m. and 4 p.m. shall be allowed to travel free for any distance on any one car on production of a Tank War Bond.

City and South London Railway.—Presiding at the annual meeting of the City and South London Railway Lord Stuart of Wortley said that if it had not been for the war the railway would have been reconstructed, and a standard type of tube train, with new carriages, would have been introduced. The system was the pioneer of the tube railways, and its rolling stock and equipment needed to be completely renewed, but at present nothing could be done.

Proposed Abolition of Halfpenny Fares at Paisley.—At the monthly meeting of the Paisley Town Council, a letter was read from Johnstone Town Council asking the former to meet them in conference with a view to opposing the application of the Paisley Tramway Company to abolish halfpenny fares. Ex-Bailie Baird said he thought they ought to confer with Johnstone, Renfrew and the County with a view to resisting the proposal. A small committee was appointed.

To Protect Bristol Tramway Passengers.—The Watch Committee of the Bristol Corporation having had their attention called to the risk of accident incurred by passengers alighting from tramway cars at the various stopping places, have issued a communication impressing upon all drivers of vehicles the danger of proceeding at a rapid pace when approaching a stationary tramcar, and to request that they will slow down in such cases, and thus minimise the risk as far as possible.

Exemption for Tramway Men.—The National Service representative at the Smethwick Tribunal last week stated that he was instructed not to oppose applications for exemptions from Military Service made by the Birmingham District Power and Traction Co., Ltd., for a number of drivers and other employees until substitutes could be found. In granting exemptions for varying periods, the Chairman said the Tribunal were of opinion that the tramways must be maintained in a state of high efficiency.

Scottish Tramways and Statutory Fares.—At a meeting of the Scottish Tramways Officials' Association held in the Council Chambers, Glasgow, on Monday, February 18, when there were present representatives from every undertaking in Scotland, the following resolution was moved and carried unanimously:—"That this meeting of the Scottish Tramways Officials' Association would respectfully urge upon the Board of Trade the urgent need for immediately obtaining powers to increase their statutory fares so as to meet the exceptionally heavy operating costs.

Southport Council to Acquire Company's Undertaking.—The Southport Town Council at its last meeting adopted the recommendation of its Tramways Committee to purchase the undertaking of the Southport Tramways Co., Ltd., as from January 1, 1918. The purchase price is £35,000, but £1,200 is to be repaid on revenue account, the company agreeing that payment of the purchase might be deferred until July, 1922, or earlier at the option of the Corporation, subject to payment of interest at 5 per cent. The Corporation negotiators have had the advice of Mr. J. B. Hamilton, general manager of the Leeds City Corporation Tramways.

The Bradford Accident.—At the adjourned inquest upon the driver who was killed at his post during the recent accident at Bradford, when a car, getting out of control from causes not yet definitely ascertained, overturned on a curve, the jury returned a verdict of "Accidental Death." They expressed the opinion that the accident was caused by a miscalculation on the part of the driver, who did not know where he was owing to the fog. They did not think there was anything wrong with the construction or mechanism of the car, but recommended that better street lighting should be provided at dangerous points. The conductress was complimented on her courageous behaviour.

The London "Safety First" Council held a very successful first annual meeting at Caxton Hall, Westminster, on Monday last, Lord Sydenham occupying the chair. The report presented showed a record of activity and progress which is particularly notable when the inevitable difficulties of starting any new organisation, or of enlisting interest in any matters not directly relating to the prosecution of the war are borne in mind. Particular attention has been, and is being, devoted to the question of the rule of the pavement for pedestrians and every effort is being made to obtain general acceptance of the "Keep to the left" rule, which has already received the approval of considerable numbers of public bodies and others concerned. In addition, a large volume of publicity and propaganda work has been carried out, whilst amongst the subjects concerning which recommendations have been submitted to Government departments and local authorities are:—The extended adoption of the system of forming queues of intending passengers at the recognised stopping places of tramway cars and omnibuses, improvements in the provision of street refuges, the position of street lamp columns, the whitening of the kerbs at street corners and around refuges for pedestrians, the lighting of obstructions where work which involves the opening of a highway is in progress, the provision of air-aid shelters and the indication of

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their situation, and the enlistment of the aid of householders in clearing snow from the paths and gutters in front of their dwellings during the shortage of labour caused by the war. A cordial vote of thanks was given to the hon. secretaries, Mr. H. E. Blain, A. E. Cave and A. P. Johnston, for their valuable services during the year.

Montearl Tramways Concession.—The contract between the City of Montreal and the Montreal Tramways Company, which is now before the Canadian Legislature, proposes a permanent tramway commission. The contract, according to the *Daily Record*, is to run for a term of thirty-five years. The capitalisation is fixed at $35,286,295, and no dividends in excess of 10 per cent. are to be paid in any one year. The city will receive $500,000 a year. After the payment of all capital charges, a surplus fund is to be provided, 30 per cent. of which will go to the city, 20 per cent. to the company, and 50 per cent. toward the reduction of fares.

Parcel Carrying at Southampton.—Southampton Corporation tramways department have inaugurated a parcels system which it is hoped will prove of assistance to local tradesmen and others. Parcels will be conveyed to different points on the tramway system by a freight car which has been constructed at the tramway works for the purpose, and every point on the tramways will be reached. Parcels must have affixed to them prepaid tickets, and can be handed to the conductor in charge of the car at any point on the route. Agents have been appointed at various places in the town to receive parcels. Anyone can call at the nearest agency, leave his parcel or receive parcels left for him. Two trips are being run daily by the car, one in the morning and the other in the afternoon.

Road Transport Board.—The President of the Board of Trade has appointed Sir Evan D. Jones, Bt., to be Chairman of the Road Transport Board. The members of the Board will be :— Sir Maurice Bonham-Carter, K.C.B. (Assistant Secretary to the Ministry of Reconstruction); Colonel H. N. Foster (Assistant Director of Supplies and Transport, War Office); Mr. A. R. Kidner (Principal Clerk, General Post Office); Sir Ernest W. Moir, Bt. (Member of Council, Ministry of Munitions); Mr. R. H. Selbie (Controller of Horse Transport, Board of Trade); Mr. W. H. S. Woodroffe (Director of T. L. M. Branch, Ministry of Food); The Board's address will be, temporarily, No. 7, Whitehall Gardens, London, S.W.1.

Hire Motor Cars and Gas Fuel.—Sir Albert Stanley, replying in the House of Commons, on February 20, to Captain Barnett, said that the use of private hire motor cars driven by gas was not prohibited, but was restricted under a recent Order of the Board of Trade to necessary purposes only. In view of the need for observing the utmost economy in labour and material, it was regretted that it was not possible to allow the use of hire cars, when driven by gas or petrol, for pleasure purposes. Owners of hire cars fitted with gas apparatus ordered prior to December 21, when the notice of intention to restrict the use of gas in motor vehicles was announced, would be granted permits on application to run these vehicles for the purposes authorised by the Order.

PERSONAL.

Mr. E. Carden, manager of Dover Corporation tramways, and Mr. L. Woodman, electrical engineer, have resigned their appointments.

Mr. T. C. Winfield, of West Ham Corporation tramways, has been appointed works superintendent of Birmingham Corporation tramways.

Corporal Walter E. West, formerly in the employ of the Bristol Tramways Company, has been awarded the Military Medal for conspicuous bravery in the field.

Mr. G. W. Holford, general manager of Salford Corporation tramways, has been granted an immediate increase of £50 in salary to £700, with a further advance of £50 in another two years.

Mr. E. B. Wedmore will read a paper on "The Control of Large Amounts of Power" before the Institution of Electrical Engineers (Institution of Civil Engineers, Great George Street, Westminister, S.W.) on Thrsday, March 7, at 6.p.m.

Second-Lieutenant C. A. Robertson, of Salford, who was reported missing on November 30 last, is now reported to be a prisoner of war in Germany. Lieut. Robertson is a son of Mr. J. A. Robertson, borough electrical engineer of Salford.

Mr. E. Cloney, district traffic superintendent in the tramways department of the London County Council, has been promoted to the position of divisional superintendent in the traffic branch of the tramways department at a commencing salary of £325, rising to £400.

Mr. J. A. Robinson, borough electrical engineer of Salford, has been granted an increase in salary by three annual advances of £100, £100 and £50 respectively to a maximum of £1,250 per annum, the first advance to date from April 1, 1917. The Corporation have adopted a scale of salaries under which the maximum salaries of the deputy engineer will be increased from £340 to a maximum of £500 per annum, the mains engineer from £300 to a maximum of £375 per annum, the station superintendent from £250 to a maximum of £375 per annum, and the charge engineers from £200 to a maximum of £250 per annum.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended February 20 amounted to £51,904, an increase of £7,913, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to February 20 (forty-six and a half weeks) the total receipts were £2,563,194, an increase of £361,394 on the corresponding period of 1917.

CONTRACTS AND ORDERS.

Harrogate Highways Committee have been authorised to purchase a 3½-ton electric tipping wagon, subject to the Ministry of Munitions granting a priority permit.

Rochdale Cleansing Committee have provisionally agreed to purchase three electrically-driven motors.

Babcock and Wilcox have an order from Barnsley Corporation for a water tube boiler at £3,900.

Glasgow Electricity Committee have recommended the acceptance of a tender by Dick, Kerr and Co., Ltd., for turbines, condensing plant, alternator and transformer at £98,400.

FINANCIAL REPORTS AND MEETINGS.

Mather and Platt, Ltd.—The directors have recommended a dividend on the ordinary shares for the year ended December 31 last at the rate of 17½ per cent. per annum less income-tax, less the interim dividend of 5 per cent. previously paid.

Electrical Distribution of Yorkshire Co., Ltd.—The net profits for 1917 were £3,693, and £731 was brought forward. A dividend of 6 per cent. is recommended on the ordinary shares, £1,000 to be added to reserve, and £697 carried forward, subject to directors' fees. In order to provide for developments it is proposed to increase the capital from £50,000 to £100,000.

Leeds Forge Company.—After making provision for contingencies, the profits permit of the payment of the usual dividend on the preference shares of 7 per cent., and a dividend on the ordinary shares of 10 per cent. for the year, free of tax. The directors state that no settlement of the pre-war standard of profits has been reached, and consequently the position regarding excess profits duty and special taxation is still undefined. They are consequently unable to present the usual report for the year.

Fife Tramway, Light and Power Co., Ltd.—The net profit for the year amounts to £31,278; of this sum £10,000 is transferred to reserve account, and £8,390 carried forward, dividend on the ordinary shares being at the rate of 5 per cent. per annum, less tax. It is announced that a new issue of debenture stock will be necessary in the near future to meet the balance of the cost of the new tramway from Dunfermline to Rosyth, undertaken in September last at the request of the Admiralty, and to provide for the further plant required by the growth of the Company's undertaking.

New Power Company.—The Tees Power Station Company was registered on February 13, with a capital of £700,000, in £1 shares, to acquire from the Newcastle-upon-Tyne Electrical Supply Company a piece of freehold land at Billingham, Durham; to erect thereon a generating station for electrical energy, and any similar stations elsewhere; to enter into an agreement with the Newcastle Company or any of its associated companies for operating the stations, and to carry on the business of electricians, mechanical engineers, etc. The first directors are J. H. Armstrong, and R. P. Sloan.

The Lancashire United Tramways, Ltd.—The result of the working of the combined undertaking for the year ended December 31 last show traffic receipts £124,825, and other receipts £16,389, making £141,214 in all. After deducting working expenses, £70,095, cost of generating energy sold, general charges and rent of leased lines, there is a balance of £49,473, to which has to be added dividend on holding in the New St. Helens and District Tramways Co., £3,068, making a total profit of £52,541. Compared with 1916, receipts show an increase of £32,942, and expenditure £13,506, the latter being principally due to increases in wages and to the high price of materials. Fares were raised to meet these increased charges, the average traffic earnings for a mile for the year being 14·73d. The interest and dividends received by the company from the operating companies, together with sundry receipts, amounted to £21,985. After deducting interest on the prior lien debenture stock, income-tax, and expenses, there remains a balance, out of which the full interest of 5 per cent., less tax, will be paid on the second mortgage debenture stock for 1917, £68 being carried to depreciation account. There is also a balance on the year's working of the operating companies, after payment of the interest and dividends, of £25,148. The depreciation and renewal accounts and amounts carried forward in the combined companies now amount to £77,101.

DICK, KERR & Co.,
Limited,
ABCHURCH YARD, CANNON STREET, LONDON, E.C.,
ENGINEERS & CONTRACTORS.

Complete Equipment
TRAMWAYS & LIGHT RAILWAYS
at home and abroad

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES.

DIVIDENDS PREV.	DIVIDENDS LAST.	NAME.	PAID.	PRICE, JULY 27, 1914.	CASH Feb. 21 or previous.	A WEEK AGO.
5%	5%	Alabama Traction 5% 1st Mt. ..	—*	67	71 7/16	71½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅞	57/3	56/3
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4⅞	46/10½	46/10½
4%	4%	Do. 4% Deb.	100	91	66½	67
4½%	4½%	Do. 4½% Deb.	100	98½	69	69
5%	5%	Do. 5% Deb.	100	96	66½	66½
—	—	Associated Omnibus Co., Ord. ..	5/-		1/2	1/2
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1 3/32	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88	88
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	101	101
—	1/-	Bath Electric Trams Pref. Ord.	1	¼	3/	3/-
6d.	6d.	Do. 5% Cum. Pref. ..	1	1/16	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	70	70
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	20½	20½
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11⅜	9⅞	9⅞
4½%	4½%	Do. 4½% Deb.	100	96	75	75
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87⅜	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	43⅜	45
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	88	88½
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5⅜	5⅜
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	90½	90½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	26	26
6%	5%	Do. Pref. Ord.	100	106	30½	30½
5%	5%	Do. 5% Cum. Pref. ..	100	103	49	47
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	85	85
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	59⅜	60½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	33	34½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	73	74½
5%	5%	Do. 5% Deb.	100	92	78½	77
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	72⅜	72⅜
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6⅜	6⅜
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 5/16	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	99⅜ 5/8	72	73½
1/-*	1/-*	Cape Elec. Trams.	1	1/32	11/-	12/3
1/3	1/3	City of B. A. Trams	5	5½	82/6	80/-
4%	4%	Do. 4% Deb.	100	97½	68⅜	69
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	85	85
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	80⅜	80⅜
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 3/8	7½
6/-	6/-	Do. 6% Pref.	10	12	10⅜xd.	10 1/8
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/1½	1/1½
1/2⅜*	1/2⅜*	Do. 6% Cum. Pref. ..	1	1/16	10/3	10/3
4½%	4½%	Do. 4½% Deb.	100	67⅜	53	53
1/1½	5d.	Hong Kong Tramway	5/-	7/16	17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44⅜	44⅜
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	⅜	2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co. ..	10	10½	9⅞	9⅞
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79⅜
9¾d.*	9¾d.*	Llandudno & Colwyn B. Ord. ..	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	1/32	2/3	2/3
6d.	6d.	Do. 5% Pref.	1	1/16	6/3	6/4½
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	62½	61½
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	81	80½
5%	5%	Do. 5% Inc. Deb.	100	88½	77	78
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	38½	37
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	86	86
7½d.%	9¾d.*	Manaos Trams & Ltg. Ord. ..	1	3/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	71	71
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	74½	72½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70½	70½
5%	5%	Do. 5% Deb.	100	87	80	80
$1¼	$1¼	Mexico Trams. Common ..	$100	70	28½	28½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	37½	37½
—	—	Do. 6% Mt. Bds. ..	100	76	25½	25½
4½%	4½%	Montreal St. 4½% Stg. Dbs. ..	100	100	88½	88½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88¼	88¼
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98¼	98½
2/-	1/2⅜*	National Steam Car	1	3/32	17/-	16/-
9¾d.*	9¾d.*	New General Traction	1	⅛	7/3	7/3
8½d.	6d.	Northern Gen. Trans. Ord. ..	1	7/32	12/9¾	12/9¾
6/-*	3/-	Para Elec. Rlys. Ord.	5	4½	78/9	78/9
5%	5%	Do. 5% 1st Deb.	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	6/10½	6/3
—	—	Do. 7% Non. Cm. Part Pf.	1	—	13/6	13/4½
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8¾d.*	Potteries Elec. Trac. Ord. ..	1	3/32	6/8½	6/8½
6d.	6d.	Do. 5% Pref.	1	1/16	12/-	12/-
8d.	1/4	Provincial Trams. Ord. ..	1	⅛	18/-	20/3
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	81	81
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	87	87
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	74⅜	75½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86½	86½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	74	74½
12/-	10/-	Shanghai Elec. Cons.	10	13	14⅜	14⅜
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/7½	4/8½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	91⅜	91⅜
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77⅜	77⅜
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	31/3	31/3
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	66	66
—	—	Yorks (W.R.) Elec. Trams. Ord.	5		18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5		84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	76½	76½
—	—	Metropolitan Dist. Ord. ..	100	21⅞	15	15½
—	—	Undgd. Elec. Rys. of London ..	10	21½	30/-	30/-
		Do. "A"	1/-	⅜	4/11⅛	4/9
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	103½	102½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	102½	101½
4%	4%	Do. 6% Iu. Bonds Rd. ..	—	88½	81	80½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C. ..	Feb. 12	363	491	+ 128	45	20,423	+ 2,263
Aberdeen Corporation ..	,, 15	1,739	2,167	+ 428	37	80,395	+ 9,982
Ayr Corporation ..	,, 16	258	324	+ 65	40	18,518	+ 2,378
Belfast City	,, 15	5,348	7,305	+ 1,957	46	304,788	+ 43,447
Birkenhead Corporation	,, 17	1,462	1,931	+ 469	46½	85,111	+ 14,191
Birmingham Corporation	,, 9	15,451	20,273	+ 4,822	45	837,367	+ 121,530
do. Motor Omnibuses ..	,, 9	807	1,189	+ 382	45	48,203	+ 4,153
Blackburn Corporation ..	,, 6	960	1,571	+ 611	45⅔	67,531	+ 11,857
Bournemouth Corporation	,, 20	1,715	2,337	+ 622	46⅔	118,108	+ 13,496
Bradford Corporation ..	,, 9	5,922	7,018	+ 1,096	45	344,007	+ 39,762
Burnley Corporation ..	,, 16	1,473	1,977	+ 504	..	..	..
Burton-on-Trent Cor. ..	,, 17	253	377	+ 124	46	14,902	+ 2,080
Bury Corporation ..	,, 17	1,324	1,649	+ 325	46½	75,541	+ 10,228
Chatham & District ..	,, 14	1,093	1,227	+ 134	7	7,211	+ 307
Cork Electric	,, 14	412	604	+ 192	7	3,597	+ 745
Derby Corporation ..	,, 16	1,022	1,292	+ 270	46	56,215	+ 4,723
Dublin United	,, 8	5,578	7,497	+ 1,919	46	39,874	+ 6,890
Dundee City	,, 13	1,317	1,728	+ 411	39½	61,359	+ 6,926
East Ham Corporation ..	,, 16	1,128	1,337	+ 209	46	62,934	+ 4,277
Exeter Corporation ..	,, 15	328	366	+ 38	46	18,291	+ 726
Glasgow Corporation ..	,, 16	23,086	26,278	+ 3,192	37⅜	985,552	+ 110,058
Glossop (U.E. Sup. Co.) ..	,, 16	120	180	+ 60	7	1,230	+ 358
Halifax Corporation ..	,, 12	1,791	2,164	+ 373	45⅔	110,577	+ 11,210
do. Motor Buses ..	,, 12	44	53	+ 9	45⅔	2,241	— 14
Hastings and District ..	,, 13	823	963	+ 140	7	6,477	+ 410
Huddersfield Corporation	,, 16	2,505	3,309	+ 804	46	147,065	+ 17,847
Ilford U.D. Council ..	,, 16	589	789	+ 200	46	35,187	+ 4,593
Ipswich Corporation ..	,, 16	369	610	+ 241	46	30,553	+ 7,652
Isle of Thanet	,, 16	226	187	— 39	20	3,417	— 1,561
Kilmarnock Corporation	,, 16	160	221	+ 61	39½	8,152	+ 1,204
Lanarkshire	,, 14	2,339	3,210	+ 871	7	19,134	+ 3,297
Lancashire United ..	,, 13	1,606	2,592	+ 986	7	15,503	+ 4,752
Leeds City	,, 16	9,145	11,373	+ 2,928	46	507,930	+ 58,837
Leicester Corporation ..	,, 16	3,201	4,187	+ 986	..	..	..
Leyton U.D. Council ..	,, 14	1,389	1,862	+ 473	46	85,883	+ 12,156
Liverpool Corporation ..	,, 9	13,179	16,644	+ 3,465	5⅔	93,506	+ 12,560
Llandudno & Colwyn Bay	,, 15	179	241	+ 62	11	2,514	+ 467
London County Council	,, 20	43,991	51,904	+ 7,913	46½	2,563,194	+ 361,394
Maidstone Corporation ..	,, 14	165	247	+ 82	46	11,291	+ 1,483
Manchester Corporation	,, 16	17,663	23,468	+ 5,805	46	971,737	+ 114,426
Nelson Corporation ..	,, 16	189	242	+ 53	46	10,893	+ 1,186
Newcastle-on-Tyne Cor.	,, 16	6,668	8,600	+ 1,932	46	364,484	+ 55,288
New St. Helens & Dist. ..	,, 13	875	1,261	+ 386	33	45,929	+ 10,779
Northampton Cor. ..	,, 15	650	894	+ 244	46	38,890	+ 5,838
Nottingham Corporation	,, 14	3,631	4,824	+ 1,193	46	206,524	+ 28,070
Oldham Corporation ..	,, 17	2,280	3,350	+ 1,070	47	133,102	+ 19,474
Portsmouth Corporation	,, 16	2,046	2,719	+ 673	..	..	..
Provincial	Jan. 26	1,750	2,479	+ 729	16⅔	39,274	+ 5,569
Reading Corporation ..	Feb. 14	805	1,166	+ 361	46	48,871	+ 9,574
Rhondda Tramways ..	,, 7	1,206	1,585	+ 379	6	8,169	+ 1,264
Rotherham Corporation	,, 20	1,562	2,002	+ 440	47½	85,515	+ 12,598
Salford Corporation ..	,, 11	4,683	6,698	+ 2,015	45⅔	300,278	+ 56,136
Sheffield Corporation ..	,, 20	10,678	13,190	+ 2,512	47	571,672	+ 74,317
Southampton Cor. ..	,, 13	1,509	2,292	+ 782	44⅔	95,000	+ 18,876
Southend-on-Sea Cor. ..	,, 13	595	711	+ 116	46	40,275	— 699
South Shields Cor. ..	,, 9	775	1,012	+ 237	45	43,497	+ 5,626
Sunderland Corporation..	,, 17	1,532	2,002	+ 470	46	85,766	+ 9,660
Sunderland District ..	,, 13	589	849	+ 260	15	12,026	+ 2,628
Swindon Corporation ..	,, 13	186	292	+ 106	44⅓	12,497	+ 3,107
Torquay Tramways ..	,, 7	433	633	+ 200	6	3,511	+ 1,040
Tyneside Trys. & Trmrds.	,, 6	608	848	+ 239	6	4,154	+ 909
Wallasey Corporation ..	,, 16	1,107	1,456	+ 349	46⅔	71,993	+ 9,847
Walsall Corporation ..	,, 16	776	1,082	+ 306	46	46,203	+ 8,496
Walthamstow U.D. Coun.	,, 16	895	1,179	+ 284	46	56,097	+ 6,990
Warrington Corporation	,, 7	467	752	+ 285	45	26,758	+ 4,301
West Ham Corporation	,, 14	2,852	3,736	+ 884	45⅔	167,336	+ 21,427
Wigan Corporation ..	,, 14	1,590	2,263	+ 673	47	93,964	+ 16,496
Yorkshire (West Riding)	,, 17	1,742	2,516	+ 774	7	16,260	+ 3,839

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Feb. 18	£53,000	£53,304	7	£368,767	+ £18,531
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Dec. 2	3,090	3,179	36	28,844	+ 214
Brazilian Traction (Mlrs.)	Dec.	7,312,000	8,069,000	52	92,200,000	+ 7,315,000
Brisbane	Dec.	32,910	35,019	52	396,339	+ 6,269
British Columbia .. $	Dec.	496,959	555,555	26	2,923,660	+ 258,275
Buenos Aires Lacroze ..	Jan.	38,142	38,902	30	269,377	— 340
Burmah Tram. & Light Rs.	Jan.	23,802	25,429	26	161,251	+ 144
Calcutta .. .. Rs.	Feb. 16	68,772	70,548	7	491,347	+ 13,424
Cape Town	Jan.	18,440	19,707	..	..	..
Carthagena and Herrerias	Jan.	3,982	4,011	4	4,011	+ 29
Cordoba	Nov.	12,836	13,339	34	108,715	— 2,137
East India	Jan.	1,836	1,176	26	7,449	— 5,574
Hong Kong .. .. $	Dec. 29	12,797	12,193	52	696,715	— 39,379
Kalgoorlie	Sept.	2,788	3,063	39	24,128	+ 861
La Plata	Jan.	4,315	4,711	4	4,711	+ 396
Lima	Dec.	37,171	41,697	52	438,895	+ 30,725
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Jan. 15	36,493	37,736	2	37,736	+ 1,243
Manila .. .. $	June	59,432	73,900	..	..	..
Manaos	Oct.	..	158,078	..	..	..
Montevideo	Jan.	33,341	36,016	13	101,101	+ 7,992
Pernambuco	Feb. 17	3,840	4,927	7	33,191	+ 8,041
Peruvian .. .. $	Jan.	935,130	1,189,350	30	7,277,620	+ 836,998
Port Elizabeth	Jan.	4,498	4,779	..	..	..
Rangoon	Jan.	4,633	5,361	4	5,361	+ 728
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Dec. 29	12,028	13,201	52	668,805	+ 12,101
Toronto .. .. $	Nov.	911,529	1,052,000	47	10,986,998	+ 1,161,954
Winnipeg .. .. $	Nov.	282,899	305,881	47	3,039,397	+ 16,227

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THE

Tramway & Railway World

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

PORTSMOUTH CORPORATION TRAMWAYS COMMITTEE.

Tenders for Supplies.

The Tramways Committee of the above Corporation invite Tenders for the supply of the undermentioned goods from April 1st, 1918, to September 30th, 1918:—

Section A.—Ballast, Sand and Grit.
Section B.—Portland Cement (British manufacture preferred).
Section C.—Brooms and Brushes.
Section D.—Oils (not lubricating), Chemicals, Sheet Glass, etc.
Section E.—Smith's Coal and Coke.
Section F.—Timber.
Section H.—Brake Blocks.
Section I.—Engine Packings, Asbestos Goods, etc.
Section J.—General Ironmongery.
Section P.—Car Repair Stores.
Section Q.—Insulating Materials, Lamps, and Motor Windings.
Section R.—Overhead Line Materials.
Section S.—Lubricating Oils, Greases, etc.
Section T.—Chandlery, etc.
Section U.—Castings and Machined Parts.

The Specification and form of Tender may be obtained upon application to the Engineer, Mr. V. G. Lironi, M.I.M.E., A.M.I.E.E., Engineer's Office, Vivash Road, Fratton, Portsmouth.

Tenders marked "Tender for————" to be delivered to the Town Clerk Town Hall, Portsmouth, not later than 10 a.m. on Tuesday, March 12th, 1918.

The form of Tender must include a declaration that the person making the Tender pays the rate of wages and observes the hours of labour and conditions contained in the Corporation Fair Wages Clause.

The Committee do not bind themselves to accept the lowest or any Tender

W. R. SPAVEN,
General Manager.

Town Hall, Portsmouth,
February 19th, 1918.

BOROUGH OF SWINDON.

Electricity and Tramways Departments.

Supply of Tramway Uniforms.

The Corporation of Swindon invite Tenders for the supply of Uniform Clothing required for the Traffic Staff.

Samples of the articles of uniform required may be inspected at the Electricity and Tramway Offices, Corporation Street, and copies of the general conditions and specification may be obtained on application to the Tramway Manager, Mr. T. Medcalf, at the above address.

Tenders, sealed and endorsed "Tender for Tramway Uniforms," and addressed to the undersigned, to be delivered at the Town Hall, Swindon, not later than twelve o'clock noon on Saturday, March 16th, 1918.

ROBT. HILTON,
Town Clerk.

Town Hall, Swindon,
February 27th, 1918.

CITY OF NOTTINGHAM.

Tramways Department.—Uniform Clothing.

The Tramways Committee are prepared to receive Tenders for the Supply of various Articles of Clothing for the Motormen, Conductors, and Inspectors for the ensuing year.

Specifications and Form of Tender may be obtained at the Tramway Offices, Beastmarket Hill, where samples of the various articles may be seen. All articles must be according to patterns. The cloth to be shrunk before being made up.

Sweating in any form will be disallowed in connection with the execution of the contract, and the contractor will be required to pay the local standard rate of wages to all workmen employed by him.

The Committee will not consider any Tender except those on the authorised form, which must be sent to the Chairman, Tramways Committee, Beastmarket Hill, Nottingham, in the official envelope provided, not later than Tuesday, March 12th, 1918, accompanied with sample of cloth. A number or mark—not a name—and the price to be fixed to each sample.

The Tramways Committee will not bind themselves to accept the lowest or any Tender.

W. J. BOARD,
Town Clerk.

Guildhall, Nottingham.
February 28th, 1918.

SALFORD CORPORATION TRAMWAYS.

Tenders invited by March 11, 1918, for twelve months' supply of Male and Female Employees' Uniform.—Apply The General Manager, 32, Blackfriars Street, Salford.

L. C. EVANS, Town Clerk.

CITY OF LINCOLN TRAMWAY DEPARTMENT.

Trailers.

The above department desire to purchase a couple of Trailers for their 4 ft. 8½ in. standard gauge system, and will be glad to consider offers for any type of vehicle provided it is not electrically equipped.

POSITIONS VACANT.

CITY OF YORK ELECTRICITY DEPARTMENT.

Appointment of Charge Engineer.

Applications are invited for the post of Charge Engineer at the Corporation's Generating Station. Salary £160 per annum, rising £5 per year to £180 (maximum). Existing war bonus 9s. per week (married), 4s. per week (single).

Candidates must have had previous central station experience with both high-tension and low-tension plant, and should not be less than 30 years of age (or ineligible for the Army).

Applications, giving full details of technical training and experience, should reach the undersigned not later than Saturday, March 9th, 1918.

J. W. HAME,
Engineer and Manager.

Electricity Offices,
Clifford Street, York.

BOROUGH OF DOVER.

Tramways Department.

Wanted, Electrician, Depot Foreman, with practical experience in the repair and maintenance of electric cars, overhead trolley lines, feeders, etc., and control of depot workmen.

List of duties may be obtained on application.

Apply, not later than March 9th, 1918, in writing, stating age, qualifications, experience, and wages required, enclosing copies of not more than three recent testimonials to

THE GENERAL MANAGER,
Corporation Tramways, Dover.

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THE
Tramway and Railway World

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SATURDAY, MARCH 2, 1918.

THE NATIONAL TRAMWAYS COMMITTEE.

The Board of Trade Tramways Committee is to be congratulated on the highly efficient way in which it has organised its work and the rapidity with which it has begun to deal with the difficulties that confront the industry at the present time. Already the entire country has been divided into sectional areas for the purpose of convenient administration, and in this way the danger of over-centralisation has been guarded against. Meetings have now been held in each of the nine areas, and the chairman, Mr. James Devonshire, and various members of the Committee have explained to tramway representatives, with a lucidity and a frankness that invite confidence, exactly what are the aims and objects of the Committee and the methods by which they hope to secure them. At the meetings in London on Wednesday, Mr. Devonshire, in an interesting address, summed up the progress that has already been achieved, and created a very favourable impression even among those of his hearers who had come in a somewhat critical frame of mind. With cordial unanimity in London, as in other areas, a sectional advisory committee was appointed to work with the main Committee in such matters as the latter delegates; and there is not the least doubt that the fullest co-operation will be given to the Committee by all tramway interests. In the present critical circumstances any other attitude on the part of those responsible for tramway operation is, indeed, unthinkable. Whatever may have been the feeling on the announcement that a National Committee was to be appointed, there is to-day a practically unanimous opinion that many and substantial advantages will accrue to the industry from the new organisation. Important steps have already been taken that will shortly result in securing certain changes that have long been advocated, but that without the influence of the Committee would still have remained unrealised. Some months ago in these columns we described the tramway industry as an industry without driving power, unable to secure reforms urgently needed and long overdue. To-day we venture to think that the necessary driving force has been found in this National Committee of practical tramway managers whom the President of the Board of Trade has called to his assistance in a time of unprecedented stress. Although the Committee has only entered on possession of its permanent offices this week, it has brought its influence effectively to bear in several directions. As a result the difficulties arising from the scanty supply of labour and materials promise to be considerably diminished. Then, too, the question of an increase in the maximum statutory fares, which has steadily grown in importance since the outbreak of war, but in regard to which nothing had really been accomplished, is now in a fair way to be satisfactorily adjusted. The Board of Trade, as a result of the Committee's efforts, will no doubt succeed in obtaining such legislative sanction as may be necessary to allow tramway authorities to make such changes as have now become requisite. In London important reforms are shortly to be realised. Under suitable conditions women will be allowed by the police department to act as drivers of tramway cars, the issue of licences both for drivers and conductors will be simplified, and the difficulties of managers will thereby be much reduced. Then the ever-recurring trouble of vehicles that have broken down on tramway tracks remaining unmoved for hours will shortly become a thing of the past. Powers are to be granted for the immediate removal of such obstructions, and in this way a great waste of time will be avoided as well as the traffic congestion that often ensues. To have accomplished so much useful practical work in the few weeks that the Committee has been in existence is a remarkable indication of the vigour and well directed industry characteristic of its members. Few committees, it may be safely said, have achieved so much in so short a time. The fact that the changes indicated have long been clamant only emphasises the value of the Committee's services. If the work was ready for them, they have accomplished it with efficiency and despatch. What they have done and are doing auguers well for their success in the more delicate tasks that lie before them. They cannot, of course, hope to avoid criticism, but the plans they have made show that the greatest care will be taken to avoid injustice to any single undertaking. It will not be pleasant to curtail or discontinue services at present unessential, but in the times in which we live there can be no escape from many things that are unpleasant if we mean to win such a victory as will bring enduring peace. Whatever restrictions of our ordinary activities may be essential to that object will be accepted by every loyal citizen without complaint.

OFFICIAL REPORT ON GLASGOW ACCIDENT.

Colonel Pringle has now issued his report on the inquiry conducted by him into the cause of the accident that occurred on December 5th, last at Queen's Park, Glasgow. The car, in charge of a youth of 16½ years of age as motorman, whilst negotiating a sharp curve at a junction of roads left the rails and overturned. Of sixty-eight persons then being carried, three were killed and 56 injured. Col. Pringle states his conclusions as follows:—(a) That the accident was caused by too high speed on a sharp curve, and that the misapplication of the mechanical brake was a factor. (b) That there is direct evidence to show that Carnegie was not driving at a reckless speed whilst approaching the curve, and I therefore consider that his failure to reduce speed within safe limits before entering the curve was due to the lighting being insufficient to enable him to gauge its real position, and possibly also to some want of concentration on his part.

He then proceeds to make recommendations regarding the future working of services at the scene of the accident, and also as regards

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street lighting in the vicinity, and the proper indication at night of compulsory stopping places imposed by safety requirements, urging that distinct marking is then even more important than by day. Particular attention, however, should be drawn to his further remarks on the subject of drivers and their ages and training. He urges that lads shall not be appointed as drivers under the age of 18 years. Those now so employed should be kept on probation for at least three months; their hours of duty should be shortened, and more frequent holidays granted, until they attain the age of 18 years. It is certainly desirable, since substitution by arrangement appears to have proved no success, that women should receive all possible encouragement to undertake the duties of driver, and thus relieve men for military service. Perhaps something can be done to reduce the strain and physical effort involved in tramcar driving by shortening the hours of duty, by giving longer intervals of rest, by minimising the effects of exposure to weather, by better illumination of the streets—and thereby to induce women to undertake the responsibilities in larger numbers.

BOARD OF TRADE TRAMWAYS COMMITTEE.

MEETING IN LONDON.

At the invitation of the Tramways (Board of Trade) Committee, a meeting of representatives of tramway undertakings in the Metropolitan, or No. 1 area, was held on February 27, at 7, Whitehall Gardens, London, Mr. James Devonshire, chairman of the Tramways Committee, presiding.

Mr. Devonshire said that while the area included many undertakings comparatively remote from London, he thought that on the whole the Metropolis would form the best centre within which to hold the meeting, especially as in London itself there was a large number of important tramway undertakings. Referring to the aims and objects of the Committee, he quoted from the speech of the President of the Board of Trade when he intimated to representatives of the two Tramway Associations the intention of the Government in regard of the matter. He said. "This question, what I may call local service more particularly, and of course, tramway service in all parts of the country, has been engaging not only the attention of the Board of Trade, but the attention of the Ministry of Munitions as well, for some time. Various problems have been raised from time to time by different undertakings; and these problems have taken various forms. We have been invited to consider the question of increasing fares, the question of rails, materials for the repair of rolling-stock, questions of services such as the inadequacy of existing services, and the establishment of additional services in order to meet new developments arising out of the war. These problems have been engaging the attention both of the Ministry of Munitions and the Board of Trade arising either out of public demands or through representations made by the various undertakings. I know as well as you do that all undertakings are not in the same position to-day. It is very difficult for us on the Board of Trade and the Ministry of Munitions as well, to deal with these problems separately. They are problems not affecting one department alone, but affecting both of the departments, and in consultation with Mr. Kellaway, who as you know is Parliamentary Secretary to the Ministry of Munitions, we have come to the conclusion that it is desirable that we should set up an organisation to which all of these undertakings can refer their difficulties, and which would on behalf of the Minstry of Munitions and the Board of Trade deal with the problems in which they are particularly interested from their point of view. I quite appreciate that in the circumstances there is a real need for some organisation and some means whereby all these great undertakings can have access to it, so that their problems, which I cannot feel will grow less as times goes by, can be all satisfactorily dealt with as circumstances will permit."

As regards the organisation of the Committee, as tramway undertakings had already been informed in a circular letter issued on January 29, the country had been divided into nine areas; areas Nos. 1, 2 and 3 had been referred to the supervision and care of one group, which was known as "A" group, and the members of that group who were present were Mr. Fell and Mr. Hamilton. Meetings had been held at Glasgow for area No. 8, at Newcastle for No. 7, at York for No. 6, at Liverpool for No. 5, at Birmingham for No. 4, and at Cardiff for No. 9. In all those places the meetings had resolved to appoint a local advisory committee, as they were that day asking areas Nos. 1, 2 and 3 to do, to confer with the area sub-committees. They had besides as part of their organisation four divisional committees, who were charged with the important questions of (1) labour, (2) priority for material, (3) rolling-stock and all questions dealing with cars and parts of cars, and (4) rails and permanent way. Mr. Hamilton had personally given a great deal of time to the question of the supply of labour, bringing to bear upon it a great deal of experience which he had gained at the Shipyard Labour Department of the Admiralty. In regard to the priority question, the Ministry of Munitions had already seen the importance and desirability of giving the Tramways Committee a seat on the Priority Committee, and from this time forward they asked all tramway undertakings throughout the country to send to the Tramways Committee direct all applications for priority of materials, as that would tend to greater efficiency, because they had a member, Mr. Howley, who attended meetings of the Priority Committee bi-weekly on Tuesdays and Fridays, and if he was not able to attend, his alternative, Mr. McElroy, general manager of Manchester Corporation tramways, took his place.

As regards the important question of rails, he knew of one concern that quite early in the war made application to the Ministry of Munitions for permission to get rails rolled in order to enable them to maintain their undertaking in a proper condition, and the Ministry gave a point-blank refusal. They recommended the undertaking to make application to the United States. An order was placed in America for 600 or 800 tons of rails, and delivery was promised early in 1918. When that country came into the war there was no prospect of obtaining material from that source. This was where their close connection with the Ministry of Munitions was of vital importance to the industry. They urged upon the Ministry the great importance of their reconsidering the question of rolling rails, and the Committee thought that they now had very good hopes of getting quite a substantial quantity of rails rolled in the coming summer, but it was really only in respect of essential undertakings that much relief could be afforded. There was a great deal of work in front of them, and the Ministry of Munitions through their M.I.T. department had already surveyed the whole country from the tramway point of view, and had prepared papers relating to each undertaking in the country, and these had been handed over to the Tramway Committee for examination.

The chairman then referred to what had been done in regard to the relaxation of restrictions as to the licensing of cars, the licensing of female conductors and drivers, and the interruption of traffic caused by vehicles obstructing the track which could not at present be moved without special police authority. A question had been raised as to relations with trade unions, but if the employment of women was regarded as essential, the National Service Ministry must find some peaceable way out of the difficulty. He had been much impressed with what he had seen and learned in Scotland. In Glasgow, with decidedly heavy routes, quite heavy cars and enormous traffic, the women handled the cars with skill and care. At Aberdeen the proportion of women on the tramway undertaking was 92 per cent. of the total employed. The Ministry of National Service would want a very strong reason why women drivers should not be much more largely employed in the South.

One important matter coming before the Committee was the question of the increase of fares. They had had many applications from local authorities and companies in regard to this matter, and the Committee had passed a resolution which they had forwarded to the Board of Trade recommending that the Goverment should clothe the Board of Trade with statutory authority to deal with this matter, and they had also requested that statutory authority should be obtained to extend the rates for parcels and merchandise generally, for the rates that could be charged under the Tramways Act of 1870 were wholly uncommercial. A member of the Tramways Committee was to serve on the recently constituted Road Transport Committee, and there was likely to be between that Committee and the Tramways Committee close relationship. No doubt one of the questions would be the distribution of food, but it would not be reasonable to ask tramway authorities to contemplate the conveyance of food over tramways unless they could obtain a fair rate for doing so. The President of the Board of Trade had decided to introduce special legislation dealing with the question of increasing the maximum statutory fares, and the chairman suggested that tramway undertakings should send in resolutions to the Board of Trade at an early date supporting their hands at this juncture.

As regarded the local advisory committees which they were setting up in the various areas, their function would be of a technical character and purely advisory. They would be in no way executive and would not move until they were set in motion by the Tramways Committee. They invited them to appoint a committee to consist of an officer from each undertaking, that officer preferably being the general manager, and they asked them also to appoint an honorary secretary. When they came to deal with the question of discontinuing services or closing routes, or even a whole undertaking, in the national interests, on that and on all questions of policy, he gave this pledge, that they would hold a local inquiry in the district or town in which the undertaking concerned was situated. On technical points it would be the duty of the local advisory committee before any decision was come to by the Tramways (Board of Trade) Committee to see that a local inquiry should be held, so that all questions of policy would be most carefully considered before any action was taken. He suggested that they should all aim at one thing, namely, the better prosecution of the war, and with the real support of tramway representatives he felt that they could hope successfully to grapple with the many perplexing difficulties they would meet.

Mr. G. H. Hume, chairman of the London County Council Highways Committee, said that it was felt by the Highways Committee that the problems which confronted each tramway undertaking were very difficult to deal with separately. The Committee having been established, they intended to help it by all the means in their power. They had confidence in the Committee; it consisted of practical men who knew the needs of the undertakings, and they had already settled some points with Government departments which they never could have settled for themselves. The advisory committees would be in constant contact with each of the undertakings. He thought it a wise provision that only officers should be represented on the advisory committees, as they were only to give technical advice. The moment any question of policy or the future interest of any particular undertaking was concerned, the Board of Trade Tramways Committee would come into contact not only with political representatives but with the public. He moved the formation of the suggested committee.

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Mr. E. Garcke, as chairman of the Metropolitan Electric Tramways Company, seconded the motion, and expressed appreciation of the action of the Board of Trade in constituting a committee which would undoubtedly help them out of many difficulties and to the members of the committee for consenting to give their time and attention to the serious problems that would be put before them.

Mr. H. Burt, chairman of the Tramways and Light Railways Committee of the Middlesex County Council, also supported the motion, which was carried unanimously.

On the motion of Mr. W. C. Ullmann, general manager of the East Ham Corporation Tramways, seconded by Mr. F. Schofield, general manager of Leyton Tramways, Mr. T. B. Goodyear, general manager of Croydon Corporation Tramways, was appointed honorary secretary.

Mr. J. B. Hamilton, on the invitation of the chairman, spoke with regard to labour, which had been and was going to be a still greater difficulty. He thought it was exceedingly fortunate for the country and for tramway undertakings that they had now a National Service which was really going to be an efficient department. The supply of casual labour would soon be nearly exhausted, and in many places very few women would be available. He thought the Board of Trade Tramways Committee would give important assistance, as they had been able to arrange relations with the National Service. They were, however, in the position of having to be very careful only to bring forward really necessitous cases. If the cases were sufficiently necessitous, the National Service would give such priority as would enable a certain number of men to be saved for the tramway undertakings, but the tramways would have to free immediately all men who were under military obligations. In many cases they must be prepared to dilute labour, particularly among motormen. Most undertakings were now employing women as conductors and car cleaners, and in many cases as car repairers and on other electrical work, and they would have to relieve male labour to the utmost in their power by the substitution of female labour. Personally he had a strong case against employment of women in the capacity of drivers. The duties called for resource and freedom from nerves, conditions which women did not fill physically, but the necessities had to be met. In many towns with suitable routes and gradients, easy curves and car equipment of a kind which could be operated without heavy physical strain, women were already doing the work and doing it very well, and in the nation's stress they must endeavour to give up their prejudices and employ female labour. If they dealt rightly with the National Service Department, they would have the whole resources of that department behind the Committee in helping tramway undertakings. The undertakings should be prepared as men were offered to them to accept them, whether they were volunteers, war munition volunteers, or army reserve munition workers. Behind the formation of the committees lay the principle of tramway undertakings, doing with as little labour and as little material as possible. They were being urged by the authorities to curtail their services wherever possible to do so in order to release people and material. It would be the essential duty of the advisory committees very shortly to advise them as to essential and non-essential undertakings. A short time ago they issued a circular asking what proportion of the routes were non-essential. The result could not be otherwise than disappointing, because every man thought that his own undertaking was essential. It was not the usual British custom to ask a man to write out his own death warrant or to give up some portion of a system for which he was responsible. That was just the thing that could be done by the advisory committees. They expected a great deal of assistance from the advisory committees on what he might call the principle of their work, that was, to secure services that were nationally required and to cut down non-essential and unnecessary services.

On Wednesday afternoon a similar meeting was held of representatives from the South-East and South (No.2 area)

MEETING AT BIRMINGHAM.

A conference of representatives of tramway undertakings in the Midlands district took place in the Birmingham Council House on February 22. The members of the Board of Trade Committee present were Mr. James Devonshire (chairman), Mr. A. R. Fearnley and Mr. R. J. Howley, and the meeting was attended by representatives of the tramway undertakings in Birmingham, Leicester, Northampton, Nottingham, the Potteries, etc.

Mr. Devonshire explained that the object was to secure the appointment of advisory committees in the areas into which the country had been divided by the Board of Trade Tramways Committee, with a view to secure the best solution of the problems and difficulties with which the tramway undertakings in the country were faced. All the Board of Trade Committee desired was to assist in the matter. Four committees, called divisional committees, had been set up to deal with the questions of labour, priority of materials, rolling-stock, etc. One of the difficulties of tramway management was the overcrowding of morning and evening cars, and he suggested that it might be mitigated by the co-operation of the big munition factories. They might agree upon a variation of their hours of commencing and closing work.

After discussion it was decided to form an advisory committee consisting of an officer of each undertaking in the area. Mr. Alfred Baker, general manager of Birmingham tramways, was elected chairman, and Mr. R. L. Horsfield, general manager of Walsall tramways, hon. secretary. The duties of the advisory committee, it was stated, were consultative and not executive.

SOUTH WALES DISTRICT.

A meeting was held at the City Hall, Cardiff, on Monday. Members of the Board of Trade present were: Mr. James Devonshire, chairman of the Committee, who was supported by Mr. Stephen Sellon, M.I.C.E., and Mr. J. B. Hamilton, general manager of Leeds Corporation tramways. Mr. Devonshire concisely explained the duties of the Committee, and it was unanimously agreed to form an advisory committee for the area, the committee to consist of an officer from each undertaking. Mr. Arthur Ellis, Cardiff, was appointed chairman, and Mr. N. J. Young, Newport, honorary secretary.

VEHICLE WORKERS AND THE WAGES QUESTION.

As is well-known, negotiations have been in progress for some time past between the Transport Workers' Federation and the Ministry of Labour in regard to the demand put forward by the Federation for the extension to tramway and omnibus employees of the advance of £1 per week on pre-war wages already awarded to drivers of commercial vehicles. There had been some formal difficulties in the way of direct discussion between representatives of the employers concerned and those of the employees, and some days ago the Minister of Labour met representatives of the Federation, and a semi-official announcement was made to the effect that an amicable settlement was virtually assured.

On Wednesday last, however, at a joint Conference at Leicester of the Executives of the Amalgamated Associations of Tramway and Vehicle Workers and the London and Provincial Union of Licensed Vehicle Workers, the following resolution was adopted:—

"That this Joint Conference, having heard the statement of the secretary of the Transport Workers' Federation, emphatically protest at the procrastination of the Labour Ministry, and hereby decide to tender seven days' notice from March 2, to expire on March 9, unless our demands for the £1 over pre-war rates, and proportionate rates for overtime, are conceded, the same to be retrospective from January 1."

It is understood that efforts are being made by the Ministry of Labour to arrange a compromise settlement, the employers being unwilling to agree to the full advance of £1 as formulated, but the secretary of the London and Provincial Vehicle Workers' Union states that no compromise will be accepted.

MISCELLANEOUS NEWS AND NOTES.

Gas Tramway Cars.—Morecambe Corporation have adopted gas for driving their petrol electric cars between Morecambe and Heysham.

Robert Kearsley and Co., Ltd., whose offices in Kingsway have been commandeered by the Government, have removed to the "Morning Post" Building, 346, Strand, London, W.C.2. Telephone number, City 6140; telegrams, "Arkalac, Westcent, London."

Epidemic of Ticket Stealing.—In a case at Grimsby last week in which a youth was prosecuted for theft of tramway tickets, it was stated that there had been a large number of cases of the kind lately in the town, boxes containing tickets and sometimes money constantly being taken from the cars.

Torquay Fares to be Further Raised.—It is understood that an additional increase is to be made on the fares of the Torquay Tramway Co., Ltd. The recent Government award as regards wages works out at 2s. 8d. per day, which, with increases already granted involves the company in an extra cost of about 10s. per week for each employee.

Liverpool's Requirements.—The Liverpool Tramways Committee propose to present a requisition to the Board of Trade asking (1) that 200 men should be provided to enable them to bring into service 100 cars urgently required on the streets, but sent into the sheds owing to lack of labour; (2) 35 additional motor omnibuses; and (3) material to the amount of about £5,000.

Dishonest Conductress Heavily Fined.—For stealing 2½d., the property of the Rhondda Tramways Company, a conductress was nned £3 at Porth last week. Receiving, by error, tickets not consecutively numbered, she took advantage of the fact. She was, however, accidentally detected, and when taxed, admitted that she had received a sum of 6s. 5½d. by removing tickets from her box.

Offices of the Tramways (Board of Trade) Committee.—The Tramways (Board of Trade) Committee has removed to 8, Buckingham Gate, Westminster, London, S.W.1. (Telephone number, Victoria 6200; telegraphic address, "Trambotcom, Sowest, London.") All communications intended for the Committee should now be addressed to the Secretary, Mr. J. N. WILSON, at the above address.

Rule of the Road and Tramcars.—In giving his decision at Dunfermline Sheriff Court in a collision case recently, the Sheriff gave a ruling as to the effect of tram lines in regard to general traffic which, as it states the position with rather more than ordinary clearness, it may be useful to quote. His Lordship said that the introduction of tram lines along public roads had interfered to some extent with the established rule of the road. A tramcar was tied to its course by its rails, and could only avoid an obstruction by stopping. The duty was, therefore, on a tramway car driver to keep his car well under control as regarded speed. On other users of the road the duty was also laid not needlessly to obstruct the line of rails, and, should unavoidable obstructions be created, to take all reasonable steps to warn the tramcar.

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Nottingham's Proposed Increase of Plant.—At the meeting of the Nottingham Corporation Tramways and Electricity Committee held last week a report was received from a deputation which had interviewed Sir John Snell on the subject of the provision of additiona plant at the generating station. Sir John Snell had intimated that his considered report would be sent at the end of this week, and it was decided to hold a special meeting of the committee on Monday next to consider it.

New Fuel Committee.—Mr. Percy Still, M.I.E.E., is the honorary secretary of a new committee recently appointed by the Controller of Munitions Mineral Oil Supplies, and styled the Heavy Oil Engine Fuel Committee. The functions of this committee are to assist the Controller in connection with the subject of fuel oil supplies, and the use of tar oil as fuel in Diesel engines, and especially in relation to applications to use tar oil, and to methods of adapting Diesel engines for this fuel. The committee will be composed of the nine members of the general committee of the Diesel Engine Users' Association, together with two further members nominated by the Institution of Electrical Engineers.

Higher Fares at Liverpool.—The Liverpool Corporation Tramways Committee have decided to ask the City Council for power to increase the fares on the ground of extra cost of labour and material. "This proposal," says the *Liverpool Daily Post*," is certain to give rise to an acute controversy, and a renewal of the old battle as between the ratepayers and the users of the cars. As will be remembered, the profits of the undertaking last year yielded a contribution in aid of the rates of £125,000. There will be much grumbling if the fares are raised, and there will be many advocates of the alternative policy of raiding the profits."

Pontypridd and the War Savings Campaign.—In accordance with a request made by the local War Savings Committee the Pontypridd Electricity and Tramways Committee at its last meeting unanimously decided to arrange for one of the tramway cars to be specially illuminated, and to tour the district each evening during the coming week ("Business Men's Week"). The car will also be used by the War Savings Committee as a platform from which open-air speeches in support of the campaign will be made. As a result of the special efforts that are being made it is hoped to raise at least £100,000 in Pontypridd during the week.

Proposed "Rationing" of Tramway Journeys.—Amongst many proposals made for dealing with the problem of congestion of passengers on tramways, more especially during the evening and mid-day "rush," is one for the so-called rationing of car tickets. It is suggested that special tickets should be issued to those who use the cars regularly for going to and from their work or business, and only those in possession of such tickets should be allowed to use the cars at the times when business traffic makes its maximum demands. Those who are not obliged to travel at certain fixed hours would thus be restricted to the quieter periods of the day, and thus the overcrowding problem might be to some extent mitigated.

Liverpool Finds Queues Impracticable.—Liverpool, like most other cities and towns in the United Kingdom, has experienced considerable trouble on account of tramway congestions, and various measures to deal with it have been proposed, including, inevitably, the queue system. The Chief Constable, however, is of the opinion that in the peculiar conditions that exist at Liverpool it would be impracticable. He points out that at one well-known centre cars pass for no less than thirty different routes, and the task of sorting passengers into so many groups is insuperable, especially with tramway staffs and police force depleted of men, as they are at the present time. Virtually all the busy centres and main streets of the city are aready over-congested, and to form waiting crowds in any of them would make confusion worse.

Scottish Transport Facilities.—The Secretary for Scotland has appointed a committee to consider and report upon rural areas in Scotland most in need of transport facilities for the promotion of forestry, etc., and means of improving communication in these areas. The members of the Committee are:—Sir T. Carlaw Martin, LL.D., chairman; Mr. H. M. Conacher, of the Board of Agriculture for Scotland; Mr. John Ferguson, C.E.; Sir Wm. S. Haldane, W.S.; Mr. J. H. Milne Home; Mr. G. Mackay, of the Local Government Board for Scotland; Professor W. R. Scott, LL.D.,; Mr. W. A. Tait, M.I.C.E.; and Mr. W. N. M' William, of the Board of Agriculture.

The Institution of Automobile Engineers.—The sixth ordinary general meeting of the Institution of Automobile Engineers, will be held at the Royal Society of Arts, John Street, Adelphi, W.C., on Wednesday, March 13, 1918, at 8 p.m., when Mr. F. L. Martineau will read a paper entitled "Nomography, with a few references to its use in engine design." Cards of invitation to the meeting can be obtained on application to the secretary of the Institution of Automobile Engineers, 28, Victoria St., S.W.1. The fifth meeting of the Institution was held at the Royal Society of Arts, John Street, Adelphi, on Wednesday, February 13, at which Mr. Ernest A. Savage, Librarian of the Coventry Library, read a paper on "The Utilisation of the Data of the Automobile Industry through Bureaux of Information." The subject might be considered by many to be somewhat outside the scope of a technical body such as the Institution; but the discussion, which was very keen, proved that it is a very live topic to-day. It will be remembered that the Council of the Industrial Research have laid great stress upon some means of providing technical information to those who require it, perhaps through the agency of bureaux of information, and in view of the proposed formation of a Research Association for the motor industry, it will be seen how important it is that the question of the form which the bureau should take should be thoroughly discussed. An interesting revival of the activities of the Institution is shown in its co-operation with the Ministry of Labour in the work of assisting officers to return to civil employment after the war. It will be remembered that before the war the Institution carried on a regular employment bureau for the purpose of introducing men to jobs, and jobs to men, but this has lapsed during the war. Now, however, it is hoped that the Institution may be able to be of considerable assistance to the Government departments concerned in connection with automotive engineering. The annual prize awarded by the Institution for the best paper read by a graduate during the session has been awarded to Mr. C. Pole Wedmore for his paper on "Valve Timing," and a second prize to Mr. H. L. Towns, for his paper on "Welding."

Local Restrictions on Gas for Vehicles.—Following upon an Order recently issued by the Board of Trade whereby the use of gas manufactured or supplied by any specific gas undertaking may be prohibited in motor vehicles "other than those used exclusively by the undertaking itself for business purposes" a notice has been issued specifying a number of undertakings to which the Order in question now applies. These are:—the Sheffield Gas Co., the Stockport Corporation, the Stockton-on-Tees Corporation, the Portsea Island Gas Light Co., the Town of Dudley Gas Light Co., and the Tottenham District Light, Heat and Power Co. Accordingly, after the 1st of March no one may "buy, sell, use, obtain, or cause or permit to be bought, sold, used or obtained" for driving motor vehicles any gas manufactured or supplied by these undertakings. Those owners of motor vehicles who hold a gas permit issued before February 9th, and who live or carry on business within the area of supply of any of the undertakings mentioned, may apply to the Petrol Control Department for a motor spirit licence in place of the gas permit, which must be surrendered if a licence is granted.

B.E.A.M.A.—We are informed that the following firms have been elected members of the British Electrical and Allied Manufacturers' Association:—

Abbott, Anderson & Abbott, Ltd.	London.
Atlas Carbon & Battery Co., Ltd.	London.
British Battery Co., Ltd.	Watford.
British Central Electrical Co., Ltd.	London.
British Ever-Ready Co., Ltd.	London.
Concordia Electric Wire Co., Ltd.	London.
Crighton & Co.	Stockport.
Davenport Engineering Co., Ltd.	Bradford.
Ecco Battery Co., Ltd.	London.
Efandem Co., Ltd.	Wolverhampton.
Film Cooling Towers, Ltd.	London.
Fleming, Birkby & Goodall, Ltd.	Liversedge.
Foster Instrument Co.	Letchworth.
Lancashire Water Cooler Co.	Salford.
Mackley, E. N. & Co.	Gateshead.
Manley, J. W.	New Barnet.
Quead, Ltd.	London.
Sunlight Manufacturing Co., Ltd.	London.
Trevelyan & Co.	Birmingham.
Vulco Dry Battery Co.	London.
Ward & Goldstone	Salford.

The Yorkshire Electric Power Company's Bill.—To the list of public authorities who have decided to oppose the Bill now being promoted in Parliament by the Yorkshire Electric Power Co., Ltd., the Wakefield City Council have to be added, a resolution in this sense having been unanimously adopted at its last meeting. At the annual general meeting of the company, held last week, the Chairman referring to the Bill said that its purpose was to extend the Company's powers on lines which, from past experience, and in view of future developments, the directors considered necessary. It was a short Bill of seven clauses only, and of these three were in the nature of recitals. The four clauses that were new were drawn to facilitate co-operation and the joint working of the large generating plants which were advocated in the report of the Coal Conservation Committee. "The districts in the company's area in which there are no authorised distributors, and which are the only ones affected by this proposal, are, as might be anticipated, those in which the population is many times over less dense per acre than in the districts possessing powers, and are those in which as a consequence the cost of supply would be greatest. They are districts, in fact, in which up to the present no one has felt encouraged to provide a supply of electricity for lighting purposes, and therefore they will benefit largely from the company's proposal in that they will be given equal advantages with other parts of the area." In conclusion, he dealt with a suggestion that the present time was not a suitable period in which to present the Bill, by pointing out that the Company had to a large extent been forced by the action of the local authorities in its area. They had been confronted with the fact that in the autumn of last year some of these authorities were preparing and presenting to Parliament Bills of a highly contentious nature, which, if passed, would seriously interfere with the company's interests, and with the general scheme of supply mains on which they were working, and that it was necessary to take immediate steps to protect themselves. Had it not been for the action of those cities, the Board would have preferred that all such legislation should be deferred till the end of the war, and they had used their best endeavours to secure that this course should be followed, but without success. The resolution approving the Bill was passed unanimously.

Blackpool Corporation Cleaning Committee have decided to purchase an additional electric vehicle at a cost of between £800 and £900.

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PERSONAL.

Mr. J. W. Galloway, tramways engineer of Halifax, is to receive an increase in his salary from £325 to £375.

Mr. E. H. Bond, the present works superintendent of Dover Corporation tramways, has been recommended for appointment as manager.

Mr. W. M. Rogerson, electrical engineer of Halifax, has been recommended for an increase in salary from £700 to £800 a year.

Mr. R. H. Wilkinson, general manager of Huddersfield Corporation tramways, has been granted an increase in salary from £500 to £600 a year.

Mr. A. F. Lucas, tramways manager of Leicester Corporation, has been recommended for an increase in salary from £500 to £600.

Mr. F. W. Purse, city electrical engineer of Carlisle, has received an increase in salary from £500 to £600, with two further annual increments of £50 per annum.

Mr. E. Carden, who recently resigned the position of general manager of Dover Corporation tramways, has been presented by the staff with a silver cigarette case.

Mr. R. T. Smith, borough electrical engineer of Leicester Corporation, has been recommended by the Tramways and Electricity Committee for an increase in salary from £900 to £1,000 per annum.

Mr. J. Lunn, of the West Ham Corporation tramways, has been appointed works superintendent in place of Mr. T. C. Winfield, who has resigned to take up a position as works superintendent at Birmingham.

Mr. E. Kilburn Scott has been appointed consulting engineer to the British American Nitrate Company, of New York. His present address is the British American Nitrate Company, 299, Broadway, New York City, U.S.A.

Leeds Tramway Officials.—The following increases in salaries have been recommended: Mr. J. Burbidge, electrical engineer for the tramways department, from £500 to £550, and Mr. A. Daggett, traffic superintendent, from £345 to £400.

Presentation to Retiring Southport Manager.—The undertaking of the Southport Tramways Co., Ltd., having been acquired by the Corporation, the manager, Mr. J. Lloyd, is retiring, and on Saturday last a presentation was made to him on behalf of the employees of the company, and of the Birkdale Electric Supply Co., Ltd. This took the form of a gold watch and chain and other gifts, together with an illuminated address signed by every member of the Southport Tramway Company's staff. Mr. Lloyd has been general manager of the company since 1880.

We regret to record the death of **Mr. E. A. Christian,** assistant engineer to the Mersey Railway Company. Mr. Christian was previously with the Manx Electric Railway Company.

FINANCIAL REPORTS AND MEETINGS.

Aberdeen Suburban Tramways Co., Ltd.—The report for the half year to January 31 shows a profit of £1,165. This, together with the sum of £448 brought forward, makes £1,613 in all to the credit of profit and loss account, subject to allowance for depreciation and directors' fees.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended February 27 amounted to £52,854, an increase of £7,129, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to February 27 (forty-seven and a half weeks) the total receipts were £2,616,062, an increase of £368,537 on the corresponding period of 1917.

Llanelly and District Electric Lighting and Traction Co., Ltd.—At the annual meeting of this company held last week, the Chairman, referring to the tramway portion of the undertaking, said he thought the time was rapidly approaching when tramway companies should approach the authorities for powers to increase fares in proportion to increased charges. The net revenue of the whole undertaking shows an increase as compared with previous years, and the directors have felt justified in increasing the dividend on the ordinary shares from 3 to 4 per cent., carrying forward to next year the sum of £1,331.

DICK, KERR & Co.,
Limited,

ABCHURCH YARD, CANNON STREET, LONDON, E.C.,

ENGINEERS & CONTRACTORS.

Complete Equipment

TRAMWAYS & LIGHT RAILWAYS

at home and abroad

Mansfield and District Tramways Co., Ltd.—The report shows a balance at the credit of revenue account, including £1,896 brought forward, of £12,265, from which appropriations have been made as follows:—Interest on debenture stock for the year to December 31, 1917, less tax, £2,285; debenture sinking fund, £1,837; transfer to reserves, £1,000; interim dividend on preference shares to June 30, 1917, paid September 1, 1917, less tax, £1,732; interim dividend on ordinary shares to June 30, 1917, paid September 1, 1917, less tax, £750, leaving an available balance of £4,659, which the directors recommend should be dealt with as follows: In payment of dividend on preference shares for half year to December 31, 1917, less tax, £1,732; in payment of dividend of 5 per cent. on the ordinary shares, making with the interim dividend already paid a distribution at the rate of 8 per cent. for the year to December 31, 1917, less tax, £1,250; to be carried forward, £1,677.

The Lancashire United Tramways, Ltd.—The ordinary general meeting was held at Winchester House, London, E.C., on Tuesday. The Hon. Sir Arthur Stanley, M.P., chairman of the company, presided, and in moving the adoption of the report and balance-sheet for 1917 he pointed out that the profit for 1917 would enable a payment of 5 per cent. to be made on the second mortgage debenture stock. The number of passengers carried during the year was 19,619,026, or an increase of nearly 2,000,000 over the year 1916, notwithstanding a decrease in car mileage of about 10 per cent. owing to the abnormal conditions now obtaining. The increase in the supply of electrical energy to consumers was also satisfactory, amounting to over 1,800,000 units. The total number of units sold was 5,126,568. As was to be expected, the expenditure showed a considerable increase, wages accounting for the greater portion of this. At the present time, 195 employees, out of a total of 400, were serving in His Majesty's Forces, of whom he regretted to say ten had been killed. The company still continue the relief to dependants of men serving with the colours. The chairman also thanked the staff and employees of the company for their monthly contributions to the funds of the British Red Cross Society and the Order of St. John of Jerusalem in England, the amount subscribed being over £1,100. A vote of thanks was accorded to the chairman, directors, officials and staff for the manner in which the working of the company has been carried out during a very difficult time.

Incorporated Municipal Electrical Association.—A preliminary programme has been issued of the twenty-third annual meeting which will be held at the Town Hall, Manchester, on June 20 and 21. As for previous meetings during the war no invitations to visitors are being issued. The programme is as follows:—Thursday, welcome by the Right Hon. the Lord Mayor; presidential address by Mr. S. J. Watson, borough electrical engineer, Bury; and discussion on "The Future of Electric Power Supply." In the afternoon visits will be made to works in Manchester and vicinity. On Friday the discussion on electric power supply will be resumed, and the annual general meeting will be held. Communications should be addressed to Mr. C. McArthur Butler, secretary, 28, Bedford Square, London, W.C.1.

Tramways "Summer Time"—At the annual shareholders' meeting of the Great Orme Tramway Company, attention was called to the fact that, despite operations of Summer Time, the line was closed at 6.30 p.m. by the clock, this being equivalent to 5.30 normally. The question was raised as to whether the effect of adhering to this hour while Summer Time was in force was not that of nullifying its benefits, and losing considerable traffic. In reply it was stated that shortage of staff rendered it impossible to take advantage of the extra hour of daylight as suggested. The Great Orme Company is, of course, in an exceptional position, working as it does only in the summer months, and its traffic being almost entirely of a pleasure character, but the possibility of similar circumstances, *i.e.* lack of relay staff preventing full advantage being taken of Summer Time, existing elsewhere is by no means remote.

POSITIONS VACANT.

INSPECTOR FOR MOTOR OMNIBUS SERVICES.

Inspectors wanted for Motor 'Bus Services. Knowledge of running repairs necessary. Ineligible Army. State qualifications and wages required. Age 24-45. Tramways Company, Oxford.

CAR SHED FOREMAN.

Foreman for large Tramway Car Shed, night duty. Must have necessary qualifications, over Army age or ineligible for Military Service, by rejection or exemption.—Box No. 15, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

SHIFT ENGINEER.

Shift Engineer wanted, with previous experience of D.C. 3-wire and traction supply. Experience in the operation of Rotary Converters will be a recommendation. Wages £3 per week of 56 hours, plus 12½ per cent. Certified undertaking. Applications, giving experience, references, etc., to be sent to ENGINEER and MANAGER, Electricity Works, Lomax Street, Radcliffe, Lancs.

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash Feb. 28 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	71½	71 7/8
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4¾	56/3	57/3
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4¾	46/10½	46/10½
4%	4%	Do. 4% Deb.	100	91	67	66½
4½%	4½%	Do. 4½% Deb.	100	98½	68½	69
5%	5%	Do. 5% Deb.	100	96	66½	66½
—	—	Associated Omnibus Co., Ord. ..	5/-	3/32	1/2	1/2
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1 3/32	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88	88
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	103	101
—	1/-	Bath Electric Trams Pref. Ord.	1	¼	3/4½	3/
6d.	6d.	Do. 5% Cum. Pref. ..	1		10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67½	70
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	20½	20½
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11¾	9¾	9¾
4½%	4½%	Do. 4½% Deb.	100	96	74	75
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	44½	43½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	90½	88
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5⅝	5⅝
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	90½	90½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	27½	26
6%	5%	Do. Pref. Ord.	100	106	31½	30½
5%	5%	Do. 5% Cum. Pref. ..	100	103	52½	49
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	87½	85
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96⅝	59⅝	59¼
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	33	33
6%	6%	Do. 6% Cum. Part. Pref.	100	—	73	73
5%	5%	Do. 5% Deb.	100	92	77½	78½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	72½	72½
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6 1/16	6¼
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	72	72
1/-*	1/-*	Cape Elec. Trams.	1	1/16	11/-	11/-
1/3	1/3	City of B. A. Trams	5	5½	82/6	82/6
4%	4%	Do. 4% Deb.	100	97½	68¾	68¾
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	85	85
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	80¾	80¾
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 7/32	7 7/32
6/-	6/-	Do. 6% Pref.	10	12	10 1/16	10½xd.
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/1½	1/1½
1/2¾*	1/2¾*	Do. 6% Cum. Pref. ..	1	1/16	10/3	10/3
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
1/1½	5¾d.	Hong Kong Tramway	5/-	1/16	17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	3/32	2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co. ..	10	10½	9 1/16	9⅞
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	78½
9¾d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	3/64	2/3	2/3
6d.	6d.	Do. 5% Pref.	1	1/16	6/3	6/3
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	61½	62½
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	81	81
5%	5%	Do. 5% Inc. Deb.	100	88½	76	77
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	41	38½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	86	86
7½d.%*	9¾d.*	Manaos Trams & Ltg. Ord. ..	1	3/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	71	71
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	74	74½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70½	70½
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	28½	28½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	36½	37½
—	—	Do. 6% Mt. Bds. ..	100	76	25½	25½
4½%	4½%	Montreal St. 4½% Stg. Dbs. ..	100	100	88½	88½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2¾*	National Steam Car	1	3/32	16/6	17/-
9¾d.*	9¾d.*	New General Traction	1	⅜	7/3	7/3
8½d.	6d.	Northern Gen. Trans. Ord. ..	1	3/32	12/9½	12/9½
6/-*	3/-	Para Elec. Rlys. Ord.	5	4½	78/9	78/9
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	7/-	6/10½
—	—	Do. 7% Non. Cm. Part Pf.	1	—	13/9	13/6
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8¾d.*	Potteries Elec. Trac. Ord. ..	1	3/32	6/8½	6/8½
6d.	6d.	Do. 5% Pref.	1	3/32	12/-	12/-
8d.	1/4	Provincial Trams. Ord. ..	1	3/32	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	¼	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	5½	80½	81
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	88	97½	87
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	97½	86½	87
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	89½	75	74½
5%	5%	Do. 5% Perp. Deb. ..	100	99	86½	86½
12/-	10/-	Shanghai Elec. Cons.	10	99½	74	74
3d.	3d.	Singapore Elec. Trams. ..	5/-	13	14½	14½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	¼	4/7½	4/7½
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	66	49	49
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	100½	93½	93½
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	98	91½	91½
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	91	77⅛	77⅛
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	4½	31/3	31/3
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	94½	66	66
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅜	18/4½	18/4½
4½%	4½%	Do. 4½% 1st Deb.	100	⅜	84/7½	84/7½
—	—	Metropolitan Dist. Ord. ..	100	85½	76½	76½
—	—	Undgd. Elec. Rys. of London ..	100	21⅜	15½	15
		Do. "A"	1/-	21½	31/10½	30/-
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	3/32	4/6	4/11½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	¾ 99	103½	103½
4%	4%	Do. 6% In. Bonds Rd. ..	—	114	100½	102½
				88½	81	81

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

Names.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1913	Incr. or Dec.
Aberdare U.D.C. ..	Feb. 19	395	466	+ 71	46	20,889	+ 2,334
Aberdeen Corporation ..	,, 20	1,737	2,134	+ 397	38	82,529	+ 10,379
Ayr Corporation ..	,, 23	268	331	+ 63	41	18,849	+ 2,441
Belfast City	,, 22	5,528	7,543	+ 2,015	47	312,331	+ 45,462
Birkenhead Corporation	,, 24	1,502	1,943	+ 441	47½	87,053	+ 14,631
Birmingham Corporation	,, 16	16,064	20,410	+ 4,346	46	857,777	+ 125,875
do. Motor Omnibuses ..	,, 16	849	1,191	+ 342	46	49,394	+ 4,495
Blackburn Corporation ..	,, 6	960	1,571	+ 611	45⅔	67,581	+ 11,857
Bournemouth Corporation	,, 27	1,826	2,472	+ 646	47⅔	120,581	+ 14,143
Bradford Corporation ..	,, 23	6,175	7,987	+ 1,812	47	359,426	+ 42,884
Burnley Corporation ..	,, 23	1,571	1,956	+ 385	..	..	..
Burton-on-Trent Cor. ..	,, 24	262	370	+ 108	47	15,272	+ 2,188
Bury Corporation ..	,, 24	1,321	1,612	+ 291	47½	77,154	+ 10,560
Chatham & District ..	,, 21	1,118	1,090	— 28	8	8,301	+ 279
Cork Electric	,, 14	412	604	+ 192	7	3,597	+ 745
Derby Corporation ..	,, 23	1,008	1,257	+ 249	47	57,472	+ 4,978
Dublin United	,, 22	6,089	7,267	+ 1,177	8	54,509	+ 9,731
Dundee City	,, 20	1,303	1,537	+ 234	40½	62,896	+ 7,166
East Ham Corporation ..	,, 23	1,134	1,238	+ 104	47	64,172	+ 4,380
Exeter Corporation ..	,, 22	325	356	+ 31	47	18,647	+ 57
Glasgow Corporation ..	,, 23	23,396	26,958	+ 3,562	38⅔	1,012,510	+ 113,803
Glossop (U.E. Sup. Co.) ..	,, 23	124	188	+ 64	8	1,418	+ 421
Halifax Corporation ..	,, 19	1,862	2,279	+ 417	46⅔	112,856	+ 11,626
do. Motor Buses ..	,, 19	41	52	+ 11	46⅔	2,292	— 3
Hastings and District ..	,, 23	837	996	+ 159	8	7,473	+ 570
Huddersfield Corporation	,, 23	2,612	3,577	+ 965	47	150,642	+ 18,813
Ilford U.D. Council ..	,, 23	611	744	+ 133	47	35,931	+ 4,732
Ipswich Corporation ..	,, 23	378	603	+ 225	47	31,156	+ 7,877
Isle of Thanet	,, 23	222	170	— 52	21	3,587	— 1,613
Kilmarnock Corporation	,, 23	168	226	+ 58	40½	8,378	+ 1,262
Lanarkshire	,, 21	2,279	3,314	+ 1,035	8	22,448	+ 4,332
Lancashire United ..	,, 20	1,752	2,587	+ 835	8	18,092	+ 5,620
Leeds City	,, 23	9,188	11,020	+ 1,832	47	518,950	+ 60,794
Leicester Corporation ..	,, 23	3,268	4,174	+ 906	..	..	..
Leyton U.D. Council ..	,, 21	1,531	1,641	+ 110	47	87,524	+ 12,266
Liverpool Corporation ..	,, 16	13,598	16,583	+ 2,985	6⅔	110,089	+ 16,545
Llandudno & Colwyn Bay	,, 15	179	241	+ 62	11	2,514	+ 467
London County Council	,, 27	45,725	52,854	+ 7,129	47½	2,616,062	+ 368,537
Maidstone Corporation ..	,, 21	173	232	+ 59	47	11,523	+ 1,542
Manchester Corporation	,, 23	18,213	23,547	+ 5,334	47	995,284	+ 119,857
Nelson Corporation ..	,, 23	193	237	+ 44	47	11,130	+ 1,230
Newcastle-on-Tyne Cor.	,, 23	6,812	8,479	+ 1,667	47	372,970	+ 56,992
New St. Helens & Dist. ..	,, 20	949	1,270	+ 321	34	47,197	+ 11,104
Northampton Cor. ..	,, 22	673	882	+ 209	47	29,773	+ 6,048
Nottingham Corporation	,, 21	3,654	4,706	+ 1,052	47	211,230	+ 29,130
Oldham Corporation ..	,, 24	2,277	2,908	+ 631	48	136,011	+ 20,106
Portsmouth Corporation	,, 23	2,050	2,605	+ 555	..	..	..
Provincial	Jan. 26	1,750	2,479	+ 729	16⅔	39,274	+ 5,569
Reading Corporation ..	Feb. 21	828	1,121	+ 293	47	40,992	+ 9,867
Rhondda Tramways ..	,, 14	1,238	1,590	+ 352	7	9,760	+ 1,616
Rotherham Corporation	,, 27	1,594	2,051	+ 457	48⅓	87,567	+ 13,056
Sheffield Corporation ..	,, 24	10,672	13,098	+ 2,426	48	584,770	+ 76,748
Southampton Cor. ..	,, 20	1,530	2,176	+ 645	45⅔	97,176	+ 19,521
Southend-on-Sea Cor. ..	,, 20	601	625	+ 24	47	40,901	— 675
South Shields Cor. ..	,, 23	795	1,032	+ 237	47	45,566	+ 6,103
Sunderland Corporation ..	,, 24	1,547	2,030	+ 483	47	87,796	+ 10,144
Sunderland District ..	,, 13	589	849	+ 260	15	12,026	+ 2,628
Swindon Corporation ..	,, 20	192	286	+ 94	46⅓	12,784	+ 3,201
Torquay Tramways ..	,, 14	408	669	+ 261	7	4,180	+ 1,301
Tyneside Trys. & Trmrds.	,, 13	586	850	+ 264	7	5,004	+ 1,173
Wallasey Corporation ..	,, 23	1,174	1,458	+ 284	47⅔	73,452	+ 10,131
Walsall Corporation ..	,, 23	770	1,045	+ 275	47	47,248	+ 8,771
Walthamstow U.D. Coun.	,, 23	932	1,088	+ 156	47	57,185	+ 7,165
Warrington Corporation	,, 21	482	744	+ 262	47	28,261	+ 4,848
West Ham Corporation	,, 21	2,924	3,377	+ 453	46⅓	170,713	+ 21,880
Wigan Corporation ..	,, 22	1,645	2,196	+ 551	47	96,159	+ 17,047
Yorkshire (West Riding)	,, 24	1,755	2,363	+ 608	8	18,623	+ 4,447

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, Salford, South Metropolitan Electric Tramways Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

Name.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Feb. 25	£47,936	£54,377	8	£423,144	+ £24,972
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Dec. 20	3,981	4,127	40	32,971	+ 360
Brazilian Traction (Mlrs.)	Dec.	7,312,000	8,069,000	52	92,200,000	+ 7,315,000
Brisbane	Dec.	32,910	35,019	52	396,339	+ 6,269
British Columbia .. $	Dec.	496,959	555,555	26	2,923,660	+ 258,275
Buenos Aires Lacroze ..	Jan.	38,142	38,902	30	269,377	— 340
Burmah Tram. & Light Rs.	Jan.	23,802	25,429	26	161,251	+ 144
Calcutta .. .. Rs.	Feb. 23	71,958	73,556	8	564,903	+ 15,022
Cape Town	Jan.	18,440	19,707	..	..	..
Carthagena and Herrerias	Jan.	3,982	4,011	4	4,011	+ 29
Cordoba	Nov.	12,836	13,339	34	108,715	— 2,137
East India	Jan.	1,836	1,176	26	7,449	— 5,574
Hong Kong .. .. $	Jan. 5	12,188	12,246	1	12,246	+ 58
Kalgoorlie	Oct.	2,716	2,795	43	26,923	+ 940
La Plata	Jan.	4,315	4,711	4	4,711	+ 396
Lima	Dec.	37,171	41,697	52	438,895	+ 30,725
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Jan. 15	36,493	37,736	2	37,736	+ 1,243
Manaos	Nov.	142,858	146,047	..	..	..
Manila .. .. $	June	59,432	73,000	..	..	..
Montevideo	Jan.	33,341	36,016	13	101,101	+ 7,992
Pernambuco	Feb. 17	3,840	4,927	7	33,191	+ 8,041
Peruvian .. .. $	Jan.	935,130	1,189,350	30	7,277,620	+ 836,998
Port Elizabeth	Jan.	4,498	4,779	..	..	..
Rangoon	Jan.	4,633	5,361	4	5,361	+ 728
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Dec. 29	12,028	13,201	52	668,805	+ 12,101
Toronto .. .. $	Nov.	911,829	1,052,000	47	10,986,998	+ 1,161,954
Winnipeg .. .. $	Nov.	282,899	305,881	47	3,039,397	+ 16,227

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THE

Tramway & Railway World

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

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Telephone: GERRARD 2948.

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LIVERPOOL—Princes Buildings, 81, Dale Street.
BIRMINGHAM—147, Corporation Street.
LEEDS—Standard Assurance Buildings, City Square.
NEWCASTLE-ON-TYNE—50, Grey Street.

Electric Tramcar Handbook

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MOTORMEN, INSPECTORS, AND DEPOT WORKERS.

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Copies can be obtained from THE TRAMWAY AND RAILWAY WORLD Offices, Amberley House, Norfolk Street, W.C.

WEEKLY LIST OF TENDERS INVITED.

CITY OF NOTTINGHAM.

Tramways Department.—Uniform Clothing.

The Tramways Committee are prepared to receive Tenders for the Supply of various Articles of Clothing for the Motormen, Conductors, and Inspectors for the ensuing year.

Specifications and Form of Tender may be obtained at the Tramway Offices, Beastmarket Hill, where samples of the various articles may be seen. All articles must be according to patterns. The cloth to be shrunk before being made up.

Sweating in any form will be disallowed in connection with the execution of the contract, and the contractor will be required to pay the local standard rate of wages to all workmen employed by him.

The Committee will not consider any Tender except those on the authorised form, which must be sent to the Chairman, Tramways Committee, Beastmarket Hill, Nottingham,' in the official envelope provided, not later than Tuesday, March 12th, 1918, accompanied with sample of cloth. A number or mark—not a name—and the price to be fixed to each sample.

The Tramways Committee will not bind themselves to accept the lowest or any Tender.

W. J. BOARD,
Town Clerk.

Guildhall, Nottingham.
February 28th, 1918.

COUNTY BOROUGH OF BOLTON.

Tramways Department.

The Tramways Committee of the Bolton Corporation invite Tenders for the following Materials and Stores for the year ending March 31st, 1919:—

Overheard Materials.
Gear and Pinion Wheels.
Iron Castings and Malleable Iron Castings.
Motor and Axle Grease.
Waste and Sponge Cloths.
Lamps, Carbons, Insulating Materials, etc.

Forms and Specifications of tender may be obtained on application to Mr. J. Barnard, Tramways General Manager, Bolton, on and after Monday next, March 11th, 1918.

Sealed tenders on forms provided, endorsed "————Contract," to be addressed to the Chairman of the Tramways Committee, Tramways Office, Bolton, and to be delivered not later than 12.0 noon on Monday, March 18th, 1918.

The Committee do not bind themselves to accept the lowest or any tender.

SAMUEL PARKER,
Town Clerk.

Town Hall, Bolton.
March 6th, 1918.

POSITIONS VACANT.

COUNTY BOROUGH OF SALFORD.

Electricity Department.

Wanted Two Experienced Switchboard and Sub-Station Attendants for 3-phase A.C. and D.C. systems. Salary 50s. to 65s., inclusive of all bonus, for 53 hours, according to experience and ability. Apply personally or by letter, giving full particulars, to the BOROUGH ELECTRICAL ENGINEER, Frederick Road, Salford.

L. C. EVANS,
Town Clerk.

ARMATURE WINDER.

Armature Winder wanted for tramway repair work, Dick, Kerr and Westinghouse motors. Permanency to suitable man, who must be ineligible for H. M. Forces, and no person already employed on Government work will be engaged. Inclusive rate 1s. 3½d. per hour with standard overtime rate. Apply, stating age and experience, with copies of testimonials, to General Manager, Corporation Tramways, Coventry.

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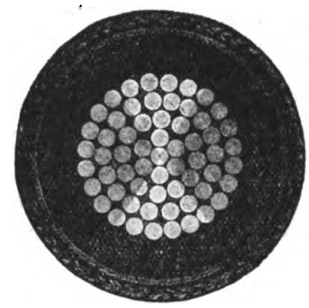
160, WOODHOUSE LANE, LEEDS.

1837.  1918.

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THE
Tramway AND Railway World

Established in 1892 and Published by

THE TRAMWAY & RAILWAY WORLD PUBLISHING CO., Ltd., AMBERLEY HOUSE, NORFOLK STREET, LONDON, W.C.

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SATURDAY, MARCH 9, 1918.

INCREASED TRAMWAY WAGES.

THE present week has been one of some anxiety to tramway authorities throughout the country. As reported in our last issue, a joint conference of the Amalgamated Association of Tramway and Vehicle Workers and the Provincial Union of Licensed Vehicle Workers decided to tender seven day's notice, to expire on March 9, unless their demands for an increase of 20s. per week over pre-war wages were conceded by all tramway and omnibus undertakings. The National Federation of Transport Workers, with which the two unions are affiliated, declared that no compromise would be accepted, and that a national settlement must be secured. Tramway and omnibus authorities on the other hand felt that the matter should be left for settlement between individual undertakings and their employees. This method has been followed hitherto with success, and in some towns the increase in wages and war allowances already granted has, in fact, amounted to more than 20s. above pre-war rates. Tramway authorities have, indeed, generally met the necessities of their employees in a liberal way, and many of them would no doubt have done still more in accordance with their individual capacities. It would undoubtedly have been wiser not to attempt to enforce a uniform settlement; for what might be a justifiable demand on one undertaking might prove a crushing burden to another. A number of tramways that hitherto have had difficulty in securing even a small profit must now look to an increase in fares to enable them to carry on. Municipal tramways will have the rates to fall back upon, but the condition of some company undertakings may be serious. It is possible that in some cases increases in fares may in the long run prove futile. For the present, however, the artificial increase in the spending power of the people occasioned by war conditions will enable them to continue to make use of the tramways in the accustomed way; but it will only be possible to subsidise the employees by transferring the burden to the tramway using public. The demand of the employees is, of course, based upon the increase in the cost of living as indicated by official figures; but these figures are notoriously misleading, because they are based on the present cost of the same foods as were used before the war. At the present time, if other less costly foods are substituted, the increase in the cost of living is much less than would be assumed from official figures. It follows that the real value of the employees' present wages may be actually greater than in pre-war times. If this be true, there is no justice in burdening tramway users with enhanced fares. Many tramway passengers are themselves much less favourably circumstanced than they were before the war, and the increment in their tramway fares may create real hardship. The answer to the demands of the employees should for this reason have been determined locally, as the conditions vary so greatly in the different towns. Representatives of the Municipal Tramways Association and the Tramways and Light Railways Association did their utmost to secure the right of local settlement for the various undertakings, but, after numerous conferences in London with representatives of the Government during the past week, it was found necessary, if the strike was to be averted throughout the country, to agree to a national settlement.

SPEEDING UP.

A correspondent writes:—In view of a further reduction in tramway employees the tramway services require speeding up, to reduce the congestion and inconvenience to passengers. It is not desirable to increase the maximum speed of the cars, but the aim should be to increase the average speed.

To accomplish this, two methods may be suggested.—The first, and rather obvious method, is to reduce the number of stopping places. For instance, why not during rush hours and for workmen's cars stop at important points only, say only at those marked "All cars stop here." Another means would be to abolish every alternate stopping point marked "Cars stop here by request." On very congested routes it might be advantageous to remove most of these signs. A few passengers would have to walk a little further to the nearest stopping places, but as the majority of passengers board the trams at important points which are marked "All cars stop here," most people would not be inconvenienced at all. All the passengers, however, would benefit by the improved service.

The second method could be used where two or more cars arrive at a terminus simultaneously; why not arrange for the leading car to pick up passengers at the terminus only for beyond a certain pre-arranged stopping place and make this place the first stop? The second car would follow immediately, so that passengers at intermediate points would not be kept waiting any longer than is usual. On certain tracks where cars for several routes run this would be less advantageous, but even then, it would be very useful when no car had appeared for several minutes, and a number arrive together. These and all methods of speeding up the tram service are to be encouraged as they confer a direct benefit on everyone concerned. The increased average speed would enable the cars to do more journeys per day. The takings of the cars would be increased, and the running expenses reduced, as there would be less repairs. This would reduce the cost of running the cars and thus delay a further increase in fares.

BOARD OF TRADE TRAMWAYS COMMITTEE.

In addition to the meetings organised by the Tramways (Board of Trade) Committee reported in previous issues, the following have been held:—Representatives of tramways in the South West and South area met in Bristol on February 26, Mr. James Devonshire, chairman of the Tramways Committee, presiding; Mr. J. B. Hamilton and Mr. A. L. C. Fell were also present. After the chairman had explained the aims of the Committee, Mr. Samuel White, chairman of the Bristol Tramways and Carriage Company, said that the plan seemed to be an excellent one to bring the tramway industry together. One effect of the movement would, he thought, be to bring the municipal and company undertakings into closer touch, and perhaps create a better feeling. In Bristol they wished to work for the common good, and the Bristol Tramways Company would be happy to do anything they could to assist their neighbours. It was agreed to form an advisory committee consisting of the managing director or other officer of each undertaking. Mr. W. G. Verdon Smith, managing director of the Bristol Tramways Company, was elected chairman and Mr. W. E. Hardy, manager of the Bath Tramways Company, secretary.

At a meeting of the representatives of tramways in the south of England held at the Board of Trade offices on February 27, it was

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also resolved to form an advisory committee for the South East and South area, and Mr. W. T. Robson, general manager of Southampton Corporation tramways, was elected honorary secretary.

Meetings have now been held in each of the nine areas into which the Committee has divided the country and in each advisory area sub-committees have been appointed. In each district there has been a gratifying response from the tramway undertakings to the suggestions of the Committee, and there is no reason to doubt that the fullest co-operation and assistance will be given by tramway interests throughout the country.

Last week representatives of several municipal tramways, including Birmingham, Cardiff, Leicester and Liverpool, met in London and decided to ask for an interview with the Board of Trade in order to urge the appointment of several additional members of the Tramways (Board of Trade) Committee. Subsequently, the deputation had a conference with Sir William Marwood at the Board of Trade, and it was understood that the matter would be referred to Sir Albert Stanley.

The following notice appears in *The Board of Trade Journal* of March 7.

1. General Area Conferences. Representatives of all the Tramway Undertakings in the Area will be called together in conference when necessary. It is suggested that two representatives of each undertaking should attend these Conferences, which will be summoned by the Tramways (Board of Trade) Committee from time to time.

2. Local Advisory Committees.—It is suggested that a Committee, consisting of an Officer representing each Undertaking in the Area be set up to act as a Local Advisory Committee.

3. The Local Advisory Committees will appoint any Sub-Committee that may be desirable to assist the Tramways (Board of Trade) Committee.

4. The Local Advisory Committees will appoint an Honorary Secretary, to whom all communications should be addressed.

L.C.C. TRAMWAY MATTERS.

At the fortnightly meeting of the London County Council on Tuesday, the business relating to tramways included the following items :—

ADDITIONS AT GREENWICH POWER STATION.

In December, 1915, and May, 1916, the Council approved capital estimates amounting to £5,250 in respect of the construction of the foundation and floor for the third additional turbo-generator of 8,000 kw. to be installed at Greenwich power station, and subsequently a smaller estimate was approved for alterations to the switchboard gallery for additional switchgear. These works are now being carried out on a prime cost basis, as well as the scheme for the provision of a condenser water pipe, which included certain building works, the cost of which was estimated at £750. The expenditure already authorised in respect of the various works is £6,390. The value of the work executed and claims made by the contractors amounts to £5,591. It is now estimated that the work still to be completed will entail an expenditure of £5,230, making a total of £10,821, an excess over the amount authorised of £4,431. The Highways Committee recommended that the whole of the expenditure should be charged to capital account in the first instance, any necessary allocation being made to revenue account when the whole of the works have been completed. A supplemental capital estimate of £5,180 was accordingly approved.

LEGAL PROCEEDINGS.

The Highways Committee reported that nine persons had been summoned for obstructing tramway cars, with the result that a fine was imposed in seven cases, two others being dismissed. Proceedings were also taken against six persons for assaulting the Council's employees ; four were fined, one was sentenced to a month's imprisonment with hard labour and one was bound over in a sum 40s. of for twelve months.

TENDERS FOR ROLLED STEEL BARS.

An invitation for tenders from selected firms for the supply of 144 and 150 rolled steel bars for pony wheel axles for tramcars was authorised.

WAGES OF EMPLOYEES IN THE ROLLING STOCK BRANCH.

It was announced that requests had been received from (1) coach body makers, coach painters, sign writers, brush hands and trimmers for additional war wages of 5s. a week in accordance with the award of the Committee on Production of November 6, 1917, relating to the engineering and foundry trades ; (2) coach washers, advertising labourers and mess room attendants for an advance of 8s. a week war wages, and (3) from storekeepers, warehousemen and harness makers for an advance of 100 per cent. above pre-war rates, and for a reduction in the hours of labour to 8 a day (48 hours a week) and from car examiners for a flat rate of pay of 7½d. an hour and an advance of 8s. a week war wages. The Highways Committee reported that they were not prepared to recommend the Council to accede to the requests and that the employees had asked that their demands might be referred to the appropriate conciliation boards, and this was agreed to.

THE THREATENED STRIKE.

Mr. J. D. Gilbert, M.P., asked the Chairman of the Highways Committee (1) whether any notice had been received from the Council's tramway employees terminating their engagements with the Council ; (2) if so, what number of men and women were affected, what date the notice ended, and what action the Highways Committee had taken in the matter with a view to arbitration or a settlement of the dispute.

In reply, Mr. G. H. Hume (Chairman of the Highways Committee) said that no notice had yet been received from any of the Council's tramway employees terminating their engagement with the Council. They had, however, received a circular letter, dated February 28th, 1918, from the National Transport Workers' Federation, in which the intention was stated of tendering notices, in certain events, on March 2nd. As regarded the second question, he understood that the general situation was being considered by the Ministry of Labour, but the Highways Committee assumed that any question which might arise, as far as the Council's tramway employees are concerned, would be dealt with under the Conciliation Board scheme. The total number of employees in the traffic section was approximately 5,000. The tramway employees could not withdraw their labour without giving notice.

THREATENED TRAMWAY STRIKE.

Numerous meetings have taken place this week in London and the provinces in connection with the demands of tramway and omnibus employees and their threat to strike. As reported in our issue of March 2, the Executives of the Amalgamated Association of Tramway and Vehicle Workers and the London and Provincial Union of Licensed Vehicle Workers tendered seven days' notice to expire on March 9, unless their demands for 20s. over pre-war rates, and proportionate rates for overtime, were conceded, the increases to be retrospective from January 1. On Thursday the Minister of Labour met in conference in London representatives of the Municipal tramways, tramway and omnibus companies, and the Transport Workers Federation, the latter representing the two tramway unions. Sir George Askwith presided, and after two sittings lasting for five hours the conference adjourned. A further meeting was held yesterday (Friday) afternoon. A general agreement has already been reached that the demand for the advance of wages should be dealt with on a national basis. At the close of yesterday's proceedings Sir George Askwith stated that he would announce his award as soon as possible.

LONDON "SAFETY FIRST" COUNCIL.

At a meeting of the London "Safety First" Council held on Wednesday, March 6, in the Council Chamber of the Guildhall, Westminster, Mr. W. Joynson-Hicks, chairman, presiding, supported by Mr. H. E. Blain and Mr. A. E. Cave, honorary secretaries, the Right Honorable Lord Leverhulme was elected a vice-president. It was reported that the Acton Urban District Council, the Gas Light and Coke Company, Lever Brothers Ltd., and the National Association of Local Government Officers had joined the Council. The following committees were elected :—Drivers' Educational, Street Safety, Publicity, General Purposes, Railway Safety, School Propaganda, and Industrial Safety First. It was decided to invite local authorities to co-operate in the organisation of propaganda meetings at town halls in the Greater London area, at which local "safety first" councils should be formed.

MISCELLANEOUS NEWS AND NOTES.

Women Tramway Employees.—The *Labour Gazette* in a recent issue stated that there were now 17,000 women employed on tramway work. In July, 1914, the number was about 1,200.

Increase of Fares at York.—Fares have been increased throughout the York Tramways to the extent of about 50 per cent. Workpeople's dinner-hour tickets have been increased by a halfpenny for each return journey.

New Use for Tramcar.—On account of the scarcity of horses, a specially fitted tramcar is, it is said, being used in Vienna as a hearse. It is constructed to take up to twelve coffins, interments being carried out several at a time and invariably at night.

Belfast's Power Station Extensions.—A special meeting of the Belfast Corporation Tramways and Electricity Committee is to be held on Monday next to consider the report of Sir John Snell on the proposed new supply and power-house schemes. The report, it is understood, is of an exhaustive character, containing a number of important recommendations.

L.C.C. Motor Vehicles to Run on Gas.—In view of the shortage of petrol a number of the motor vehicles employed by the London County Council tramways department are to be adapted to run on coal gas. The gas containers and other equipment will be purchased forthwith in order that the conversion may be completed without delay.

Glasgow Stopping Places.—Mr. James Dalrymple, general manager of Glasgow Corporation tramways, has reported to the Tramways Committee that the recommendation of Major Pringle on the tramway accident at Queen's Park Gate, that stopping places be fixed before, and not in or around the curve, had already been adopted, and a similar change was being made as rapidly as possible at other places on their lines.

Proposed Parcels Service for Nottingham.—At last Monday's meeting of the Nottingham City Council, it was announced that arrangements were being made by the Tramways Committee in conjunction with the Food Control Committee for the co-ordination of transport. These provide for the carriage of parcels and merchandise on the tramways, and later for the conveyance of parcels in bulk. Receiving depots also were to be opened in various parts of the city, and suitable measures taken for distribution from such depots.

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Midland Tramwaymen's Wages.—By a recent decision of the Committee on Production at a special arbitration tribunal, the motormen and male conductors, aged 16 and over, of the Birmingham and Midland Tramways Joint Committee are to receive 16s. a week over their pre-war wages from January 1 last.

Big Cheshire Power Scheme.—The first of the large-scale generating stations, as recommended in the report of the Coal Conservation Committee, is to be installed by the Mersey Power Co., Ltd., at Runcorn, Cheshire, a capital expenditure of about half a million being involved. It is intended eventually to provide for a total capacity of 130,000 h.p., with a view of supplying electrical energy to a number of towns in Lancashire and Cheshire.

Government and L.C.C. Agreement Regarding Accidents.—To save expense and possible litigation an arrangement has been made between the L.C.C. and the Government whereby claims arising from accidents in which vehicles owned by both authorities are involved will be settled on the basis of mutual "set-off." That is to say, so long as the number of claims as between the one side and the other is equal, no action will be taken by either.

Costly Free Rides for Corporation Employees.—The Hull Corporation is finding somewhat expensive its policy of allowing employees of the Corporation the privilege of free travel on the tramways. At the last meeting of the Tramways Committee it was pointed out that this concession now costs the ratepayers £700 a year. The practice is for the various departments to issue prepaid tickets, and measures for limiting their use were decided upon.

Limiting Free Rides for Wounded.—Owing to increasing overcrowding on its cars the Stalybridge, Hyde, Mossley and Dukinfield Tramways Board has been reluctantly compelled to make a regulation restricting the privilege of journeys for wounded soldiers on its cars. This prescribes that not more than twelve wounded men shall be carried free at one time on any one car, in order to ensure that the general public shall not be crowded out, as has frequently occurred of late.

Electric Traction on the London and South Western Railway.—Brigadier-General W. H. Drummond, presiding at the meeting of the London and South Western Railway Company, said that the electrification of certain suburban lines had had "astonishingly" successful results. Nearly ten million more suburban passengers were carried in 1917 than in 1915. This excellent result seems to reflect somewhat on the delay of the directors in applying electric traction to their suburban lines.

"Queue" Difficulties in Bradford.—Although as a remedy for congestion and struggling queues have been established at Bradford, it is understood that they have not proved so efficient a solution of the difficulty as was hoped. The local conditions are, in fact, such that it is impossible to line up waiting passengers in a really satisfactory way, and there appears to be insufficient staff available to regulate the crowds; the consequence is that the more unscrupulous individuals constantly manage to board the cars out of their proper turn.

Women Drivers and the Metropolitan Police.—The Walthamstow Tramways Committee have received a letter from the Commissioner of the Metropolitan Police stating that he is not yet in a position to give any decision in regard to the employment of women as drivers of electric tramway cars. He also stated that he had no power to issue a licence to any person under 21 years of age. The Committee recommends that the Home Secretary should be asked to take the necessary steps to give the Commissioner of Police power to issue licences as drivers of electric tramway cars to women and youths under 21.

Proposed Parcels Service at York.—At the last meeting of the York Corporation Electricity and Tramways Committee a report upon a proposal to use the tramways in connection with the delivery of tradesmen's parcels was considered. The scheme, which was originally put forward by the local Food Control Committee, provides for the collection by the tramcars of parcels from tradesmen on their routes, delivery by the cars to a central receiving station, and from thence despatch to destination by motor van. Subject to reservations as to cost, and the difficulties arising from the depleted tramways staff, it was agreed that the scheme be given a trial.

Halifax and the Overcrowding Problem.—The question of overcrowding on the tramways is engaging particular attention at Halifax, in common with many other towns in the country. So far as the organisation of the service and police regulations are concerned, everything that circumstances will allow has been done. The only possible means of alleviating the trouble appears to be that of revising the closing hours of industrial establishments, so that by closing at different times, instead of more or less simultaneously as at present, the crowds of workers returning home are distributed over as long a period as possible, thus abolishing, or at all events minimising, the present congestion of passengers.

The Proposed Queensferry Tramway.—At the last meeting of the Edinburgh Town Council a report was received from the Tramways Committee to the effect that details of the routes of the proposed Queensferry and Port Edgar Tramway had been agreed upon. The addition to the plans, already settled, of a line through the High Street of Queensferry was recommended and approved, the Queensferry Town Council being exceedingly desirous that this should be made. It is believed that it will be of great benefit to Queensferry, although some doubts are expressed as to whether the High Street of the town may not prove inadequate for the traffic which the proposed tramway may directly and indirectly bring thereto.

Gateshead Conductress's Presence of Mind.—The vital importance that the training of women conductors should be such as to enable them to take charge of a car, at least for a brief emergency period, was illustrated by an incident that occurred at Gateshead the other day. Whilst a car was proceeding along one of the principal streets, the driver either fell or was knocked from the platform, with the result that the car ran on out of control. Here were all the materials for a more or less serious accident, but luckily the conductress happened to possess a cool head, and knowing, moreover, what to do, proceeded to take appropriate measures. Rushing to the front of the car, she succeeded in applying the brakes, and bringing it to a standstill. It was certainly a praiseworthy and very opportune exhibition of courage and resource.

Tramway Premises Endangered by Stockton Fire.—In the course of a fire last week at a large timber yard at Stockton, the power-house, car sheds, etc., of the Imperial Tramways Co., Ltd., were for some hours in imminent peril of being involved. It was, in fact, only by the greatest possible efforts on the part of the fire brigades in attendance that the premises were saved. The danger was aggravated by a strong wind which blew the flames in their direction. As a precautionary measure all the rolling stock was removed, and for some considerable period the tramway company's employees, with their own fire appliances, were engaged in supplementing the efforts of the firemen. It was only thus that the company's whole plant was saved from destruction. A joiner's shop, however, was burnt out, and there was a great deal of damage by water.

Railless, Ltd.—Tramway managers and all who are concerned with public transport both of passengers or goods on roads and streets will be interested to learn that a new company has recently been formed to take over the patents and goodwill of the R.E.T. Construction Company. Its name, "Railless, Ltd.," sufficiently indicates its objects, and it only remains to add that it will work the well-known R.E.T. system which has been operating successfully for several years in various towns, including Leeds and Rotherham at home, Boksburg and Bloemfontein in South Africa, and Shanghai in China. Under the present conditions the work of the company must, of course, to a great extent be preparatory, but much preliminary work can be done now, and the way paved for meeting the widespread demands for increased facilities of travel which will follow the conclusion of peace.

Storm Havoc in Scotland.—Many tramways in Scotland experienced great difficulties on account of the severe gale and snowstorm last week. In a number of districts rail as well as road traffic was held up, and owing to breakages of trolley wire, fallen trees blocking the track, and snow-drifts, services from Wemyss to Leven and at Musselburgh had to be suspended for some hours. In Dundee, however, the effects were most keenly felt at the busiest time of the morning, the lines being blocked at the termini. Despite strenuous endeavours on the part of the staff, the process of clearing the tracks could only be accomplished gradually, and for a considerable time a partial service was all that could be maintained, and that only with great difficulty. At Carnoustie the aid of a steam plough had to be requisitioned before the tramway service could be run.

The Question of "Queues."—In practically every town and city where there are tramways the question of setting up "queues" for waiting passengers at busy centres has lately been raised. In making this suggestion as a panacea for the ills of overcrowding and congestion its advocates, however, forget that it is only in certain conditions that the queue system can be applied. In the first place, something in the nature of permanent barriers, or preferably covered shelters, in which crowds may be sorted out in accordance with their destinations is essential, and this requires that some space must be available where such erections can be put up without obstructing traffic. This latter condition is but rarely available; throughout the whole of the London Council's routes it has been found possible to apply it in only two places, and nowhere else is it regarded as feasible to set up regular tramway queues. The two places in question are both on the Embankment, and one of them where a wide open roadway exists, allowing sufficient space to erect the necessary shelter ont of the direct way of traffic. Thus the "queue" system, so far from being an obvious remedy for the troubles referred to, is one that experience shows can only be utilised in certain well-defined conditions.

"Joy Rider" or Passenger?—A somewhat curious dispute was involved in a police court case at Wigan on Monday last, when a boy of 12 was summoned for contravening the Wigan Corporation tramway by-laws by unlawfully riding on the step of one of the cars. An Inspector stated that, on going to board the car suddenly from another going in an opposite direction, he found the defendant trying also to get on. Treating him as a bona-fide passenger he proceeded to help him up. The boy then, however, commenced to struggle, and ultimately fell and was dragged along the road for same distance by the car. It was contended that had he, in fact, intended riding as an ordinary passenger, he would not have acted as he did. Hence proceedings were taken with a view to stopping a practice that was not only a nuisance to the Corporation, but dangerous to those who indulged in it. The defendant declared, however, that he was going home and intended travelling by the car, and just as he was jumping on the inspector pulled him off. He showed the latter that he had money to pay his fare. Evidence of tramway servants appeared to be equally favourable to both of the parties, and eventually, in view of the conflict of evidence, the magistrates dismissed the case, expressing the opinion, however, that owing to the dangers involved to boys jumping on and off cars, it was quite a proper case to bring before them.

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Prospective Business in Brazil.—An agent in Maranham, Brazil, desires to obtain an opportunity to represent British manufacturers after the war. The inquirer states that there is a prospect of an electric lighting plant being constructed in Maranham, and a possibility of the introduction of electric traction. The name may be obtained from the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, London, E.C. (Reference No. 44).

Musselburgh Tramways Co. and Town Council.—At a meeting last week of the Musselburgh Town Council, a deputation from the Musselburgh and District Tramway Co., Ltd., attended to deal with certain complaints that had been made recently as to the working of the system. While the Company agreed that their system was not in good order, Mr. J. Anderson, one of the directors, submitted that the present difficulties were entirely beyond the control of the Company. He quoted the facts and figures as to the scarcity of labour and the impossibility of procuring material for repairs and renewals and the upkeep of the cars. Mr. E. J. Walsh (manager) supplemented Mr. Anderson's statement, and the result appeared to be that the Council were satisfied that the deficiencies of the tramway system were beyond the Company's control and were brought about by war conditions. The Council were assured, however, that every effort would be made to keep the system going on as efficiently as possible, notwithstanding the difficulties under which they were labouring. The Council fully recognised these difficulties and assured the Company that they were satisfied that so far as the manager was concerned, he had done everything possible to contend with the difficulty of the situation. It was agreed that the Council make representations on the subject to the Tramway Committee in London, pointing out the necessity for material being authorised for the maintenance of the cars and overhead system, and also directing attention to the extent to which tramways are used for trade purposes, and particularly for convenience of miners and people on work of national importance.

PERSONAL.

Mr. J. B. Patterson, acting electrical engineer to Lancaster Corporation, has been granted an increase in salary.

Mr. W. H. Ellis, traffic superintendent of Chester Corporation Tramways, has been appointed manager at an increased salary.

Mr. C. H. Built has been appointed manager of Worcester tramways in succession to Mr. R. Simpson. Mr. Built has been in the service of the company since 1904.

Mr. Arthur Goodwin, of Messrs. C. A. Vandervell and Company, has resigned the position of president of the Motor Trades Association. After two years' service he feels that he is entitled to claim more time for his own affairs. During Mr. Goodwin's presidency the Association has made great progress and the membership now embraces representatives of the whole of the motor car industry in the country.

FINANCIAL REPORTS AND MEETINGS.

Galway and Salthill Tramway Co.—An order for the voluntary winding up of this company, for which at the recent meeting of shareholders it was decided to apply, was granted by the Master of the Rolls at Dublin last week.

Castlederg and Victoria Bridge Tramway Co.—The directors in their annual report state that after providing for interest there remained a balance of £1,051 7s. 5d., out of which they recommend the payment of a dividend of 3 per cent. for the six months.

Bruce Peebles and Co., Ltd.—The directors' report for the year ended December 31, 1917, shows that the trading profit amounted to £23,616. After deducting administration expenses, interest on debentures and depreciation, there remains a net profit of £14 584, which is subject to excess profits duty for the years 1916 and 1917, the amounts of which have not yet been adjusted. Having regard to the abnormal times, the directors regard the results as satisfactory.

Tyneside Tramways and Tramroads Co., Ltd.—At the half-yearly meeting of shareholders held last week, the chairman, in moving the adoption of the report, said that the receipts had been considerably in excess of the previous year, and altogether were something like £11,500 more than a year ago, and the greater part of that increase had been made in the latter half of the year, and they were still increasing. The increase was not due to an increase in ordinary fares, for these had remained practically the same as before. The increased income was distributed over three heads — ordinary traffic, holiday traffic, and workmen traffic. The larger amount of the increase, about 85 per cent., was under ordinary traffic, and was probably due to the fact that railway traffic had been very much reduced and was more expensive, and also because there were no facilities for river traffic. Referring to suggestions that, in view of the Company's prosperity, a larger dividend might have been paid, he remembered that the directors had not thought it right to deal liberally with the available balance for that purpose because of the expenses that would be incurred as soon as the war was over in relaying the track. Therefore it had been necessary to build up a considerable reserve fund and suspense account. But now there was a sufficient balance left to warrant the directors paying a bonus of 1 per cent. They regarded it as a bonus, and not as an increased dividend. The sum of £1,000 had been transferred to the reserve fund for depreciation, and the sum of £1,400 to the special reserve fund.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended March 6 amounted to £53,047, an increase of £6,904, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to March 6 (forty-eight and a half weeks) the total receipts were £2,669,126, an increase of £375,457 on the corresponding period of 1917.

Tramways Light and Power Co., Ltd.—The fifth ordinary general meeting of this company was held last week, the Right Hon. Viscount Chilston presiding. In the course of his speech, the Chairman said that the difficulties of such undertakings as those in which they were interested had not grown less during the past year, but, notwithstanding, they were able to report substantial progress. Having referred to the various properties from which the Company's revenue is derived, he proceeded to review the balance sheet. The total income for the year from these sources amounted to £42,215, as compared with £35,272 in 1916, or an increase of £6,943. Administration expenses were £1,100 greater, and the balance available for debenture interest, sinking fund and dividend was £39,274 as against £33,420. In regard to the Company's Leamington and Warwick property, in the profits of which there was a decrease in 1916, these were now showing considerable improvement, except the purely lighting portion of the Warwick undertaking. Here there was considerable increase in gross receipts, but it had been absorbed by increased working expenses. The report and accounts were duly adopted, and in acknowledging the usual vote of thanks the Chairman gave figures showing the progress the company had made. In 1914, the first complete year, the receipts were £28,047, and in 1915 £30,501. For 1916 they had increased to £35,287, and for the year under review £42,238.

CONTRACTS AND ORDERS.

The Anti-Attrition Metal Company have an order for axle keeps and axle bearings from Salford Corporation tramways.

Hadfields, Ltd., and Cammell Laird and Co., Ltd., have orders for steel tires from Salford Corporation tramways.

The Clay Cross Company have received an order from Glasgow Corporation for two sets of fuel economisers for Pinkston power station.

Johannesburg Municipal Council has accepted the tender of Hadfields, Ltd., for 300 steel tramway tires at £6 5s. 6d. each, subject to fluctuations corresponding with the cost of manufacture, etc.

HALIFAX CORPORATION TRAMWAYS

	1916–17.	1915–16.	1914–15.
	£	£	£
Traffic revenue	114,092	112,937	111,722
Total revenue	115,075	113,602	113,170
Working expenses	76,136	72,246	73,504
Interest on capital	10,983	9,832	10,424
Contribution to sinking fund	12,843	12 469	12 106
Net profit	15,113	19,055	*16,211
Total car miles run	2,048,772	2,195,980	2,330,104
Passengers carried	21,180,584	21,024,003	20,707,071
Total number of B.O.T. units used	4,546,756	4,618,207	4,607,293
Total number of B.O.T. units used per car mile	2·22	2·10	1·98
Average number of cars in use daily	68·9	73·5	78
Traffic revenue per mile of single track	£2,056	£2,035	£2,015
Traffic revenue per car mile	13·36d.	12·34d.	11·51d.
Total revenue per car mile	13·48d.	12·41d.	11·66d.
Working expenses, per car mile, including power cost	8·92d.	7·90d.	7·57d.
Percentage of expenses to total receipts	66	63	65
Average car miles per day	80·61d.	82·08	81·76

*After charging £925 Parliamentary expenses.

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Limited,
ABCHURCH YARD, CANNON STREET,
LONDON, E.C.,
ENGINEERS & CONTRACTORS.
Complete Equipment
TRAMWAYS & LIGHT RAILWAYS
at home and abroad

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash March 7 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	68	71⅛
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅛	56/3	56/3
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4⅛	46/10½	46/10½
4%	4%	Do. 4% Deb.	100	91	66	67
4½%	4½%	Do. 4½% Deb.	100	98½	68	68⅛
5%	5%	Do. 5% Deb.	100	96	67	66⅛
—	—	Associated Omnibus Co., Ord. ..	5/-	5/8	1/2	1/2
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1 3/16	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88	88
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	103	103
—	1/-	Bath Electric Trams Pref. Ord.	1	⅛	3/4½	3/4½
6d.	6d.	Do. 5% Cum. Pref. ..	1	9/16	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72⅛	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77⅛
14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	20½	20½
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11⅛	9⅛	9⅛
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87⅛	87⅛
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	44⅛	44⅛
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	90	90⅛
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5⅛	5⅛
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91	90½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	26	27½
6%	5%	Do. Pref. Ord.	100	106	33	31⅛
5%	5%	Do. 5% Cum. Pref. ..	100	103	53	52½
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	85	87⅛
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	60½	59⅛
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	32½	33
6%	6%	Do. 6% Cum. Part. Pref.	100	—	74	73
5%	5%	Do. 5% Deb.	100	92	78½	77⅛
4½%	4½%	Do. 4½% 2nd Deb.	100	77½	65½	65⅛
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	72⅛	72⅛
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	£6/16/6	6 15/16
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	72
1/-*	1/-*	Cape Elec. Trams.	1	1 1/16	12/-	11/-
1/3	1/3	City of B. A. Trams	5	5½	80/7½	82/6
4%	4%	Do. 4% Deb.	100	97½	68½	68⅛
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	85	85
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	82½	80⅛
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 3/4	7 3/4
6/-	6/-	Do. 6% Pref.	10	12	10 5/8	10 5/8
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	⅛	1/1	1/1⅛
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1	1/16	10/1½	10/3
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
1/1½	5½d.	Hong Kong Tramway	5/-	5/16	17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44⅛	44⅛
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74⅛	74⅛
—	—	La Plata Trams. Ord.	1	⅛	2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co. ..	10	10½	10 1/16	9 15/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79⅛	79⅛
9¾d.*	7¾d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
--	1¾d.	London & Sub. Traction Ord. ..	1	1/32	1/6	2/3
6d.	6d.	Do. 5% Pref.	1	5/16	5/-	6/3
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	60	61⅛
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80⅛	81
5%	5%	Do. 5% Inc. Deb.	100	88½	76	76
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	45½	41
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	86	86
7½d.%*	9¾d.*	Manaos Trams & Ltg. Ord. ..	1	3/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	71	71
$1⅛	$1⅛	Manila Elec. R. R. & Light ..	$100	102	75½	74
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70⅛	70⅛
5%	5%	Do. 5% Deb.	100	87	80	80
$1⅛	$1⅛	Mexico Trams. Common ..	$100	70	26	28⅛
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	36½	36½
—	—	Do. 6% Mt. Bds. ..	100	76	25⅛	25⅛
4½%	4½%	Montreal St. 4½% Stg. Dbs. ..	100	100	88⅛	88⅛
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88⅛	88⅛
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98⅛	98⅛
2/-	1/2½*	National Steam Car	1	1/2	16/4½	16/6
9¾d.*	9¾d.*	New General Traction	1	⅛	7/3	7/3
8¾d.	6d.	Northern Gen. Trans. Ord. ..	1	3/16	12/9½	12/9½
6/-*	3/-	Para Elec. Rlys. Ord.	5	4½	78/9	78/9
5%	5%	Do. 5% 1st Deb.	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	7/1½	7/-
—	—	Do. 7% Non. Cm. Part Pf.	1	—	13/9	13/9
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8¾d.*	Potteries Elec. Trac. Ord. ..	1	1/16	6/8½	6/8½
6d.	6d.	Do. 5% Pref.	1	1/16	12/-	12/-
8d.	1/4	Provincial Trams. Ord.	1	⅛	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	87	86⅛
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	74⅛	75
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86½	86⅛
5%	5%	Do. 5% Perp. Deb. ..	100	99½	72⅛	74
12/-	10/-	Shanghai Elec. Cons.	10	13	14⅛	14⅛
3d.	3d.	Singapore Elec. Trams. ..	5/-	½	4/7½	4/7½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	91⅛	91⅛
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77⅛	77⅛
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	31/3	31/3
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	66	66
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅛	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅛	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	76⅛	76⅛
—	—	Metropolitan Dist. Ord. ..	100	21⅛	14⅞	15⅛
—	—	Undgd. Elec. Rys. of London ..	10	21⅛	31/1⅛	31/10⅛
		Do. "A"	1/-	⅛	5/1⅛	4/6
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	103½	103½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	99⅛	100½
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	80½	81

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C.	Feb. 26	394	443	+ 49	47	21,332	+ 2,383
Aberdeen Corporation	„ 27	1,780	2,172	+ 392	39	84,701	+ 10,772
Ayr Corporation	Mar. 2	259	331	+ 72	42	19,181	+ 2,513
Belfast City	„ 1	5,477	7,288	+ 1,811	48	319,619	+ 47,273
Birkenhead Corporation	„ 3	1,504	1,916	+ 412	48½	82,970	+ 15,045
Birmingham Corporation	Feb. 23	16,265	20,354	+ 4,089	47	878,131	+ 129,964
do. Motor Omnibuses	„ 23	817	1,216	+ 399	47	50,611	+ 4,894
Blackburn Corporation	Mar. 6	960	1,571	+ 611	45⅔	67,531	+ 11,857
Bournemouth Corporation	„ 6	1,731	2,295	+ 564	48⅔	122,876	+ 14,707
Bradford Corporation	„ 2	6,138	7,190	+ 1,052	48	366,616	+ 43,936
Burnley Corporation	„ 2	1,550	1,931	+ 381	..	..	..
Burton-on-Trent Cor.	„ 3	254	373	+ 119	48	15,645	+ 2,307
Bury Corporation	„ 3	1,370	1,572	+ 202	48½	78,726	+ 10,762
Chatham & District	Feb. 28	1,169	1,179	+ 10	9	9,480	+ 289
Cork Electric	„ 28	462	587	+ 125	9	4,771	+ 966
Derby Corporation	Mar. 2	1,000	1,231	+ 231	48	58,704	+ 5,204
Dublin United	Feb. 22	6,089	7,267	+ 1,177	8	54,509	+ 9,731
Dundee City	„ 27	1,335	1,587	+ 252	41½	64,484	+ 7,417
East Ham Corporation	Mar. 2	1,170	1,270	+ 100	48	65,441	+ 4,480
Exeter Corporation	„ 1	344	364	+ 20	48	19,011	+ 77
Glasgow Corporation	„ 2	24,072	26,824	+ 2,752	39⅔	1,039,334	+ 116,581
Glossop (U.E. Sup. Co.)	Feb. 23	124	188	+ 64	8	1,418	+ 421
Halifax Corporation	„ 26	1,852	2,215	+ 363	47⅓	115,071	+ 11,989
do. Motor Buses	„ 26	44	51	+ 7	47⅓	2,343	+ 8
Hastings and District	Mar. 4	980	905	— 75	9	8,378	+ 495
Huddersfield Corporation	„ 2	2,684	3,135	+ 451	48	153,777	+ 19,264
Ilford U.D. Council	„ 2	618	763	+ 145	48	36,694	+ 4,876
Ipswich Corporation	„ 2	384	621	+ 237	48	31,799	+ 8,139
Isle of Thanet	„ 2	266	162	— 124	22	3,749	— 1,737
Kilmarnock Corporation	„ 2	169	213	+ 44	41⅓	8,591	+ 1,306
Lanarkshire	Feb. 28	2,442	3,339	+ 897	9	25,788	+ 5,229
Lancashire United	„ 27	1,788	2,655	+ 867	9	20,747	+ 6,481
Leeds City	Mar. 2	9,353	11,124	+ 1,771	48	530,084	+ 62,644
Leicester Corporation	„ 2	3,147	4,217	+ 1,070	..	..	..
Leyton U.D. Council	Feb. 28	1,577	1,721	+ 144	48	89,246	+ 12,410
Liverpool Corporation	„ 23	13,972	16,667	+ 2,695	7⅔	126,756	+ 19,240
Llandudno & Colwyn Bay	„ 22	177	250	+ 73	12	2,764	+ 540
London County Council	Mar. 6	46,143	53,047	+ 6,904	48⅓	2,669,126	+ 375,457
Maidstone Corporation	Feb. 28	172	246	+ 74	48	11,769	+ 1,616
Manchester Corporation	Mar. 2	18,243	23,318	+ 5,075	48	1,018,602	+ 125,029
Nelson Corporation	„ 2	207	264	+ 57	48	11,394	+ 1,287
Newcastle-on-Tyne Cor.	„ 2	6,934	8,503	+ 1,569	48	381,465	+ 58,595
New St. Helens & Dist.	Feb. 27	977	1,332	+ 355	35	48,529	+ 11,466
Northampton Cor.	Mar. 1	687	960	+ 273	48	40,732	+ 6,321
Nottingham Corporation	Feb. 28	3,718	4,868	+ 1,150	48	216,098	+ 30,271
Oldham Corporation	Mar. 3	2,311	2,855	+ 544	49	138,866	+ 20,650
Portsmouth Corporation	„ 2	2,198	2,648	+ 450	..	..	..
Provincial	Jan. 26	1,750	2,479	+ 729	16⅔	39,274	+ 5,569
Reading Corporation	Feb. 28	841	1,146	+ 305	48	51,137	+ 10,172
Rhondda Tramways	„ 21	1,310	1,551	+ 241	8	11,312	+ 1,857
Rotherham Corporation	Mar. 6	1,569	1,101	+ 332	49⅓	89,468	+ 13,389
Sheffield Corporation	„ 3	10,970	12,854	+ 1,884	49	597,624	+ 78,627
Southampton Cor.	Feb. 27	1,559	2,252	+ 692	46⅔	99,429	+ 20,214
Southend-on-Sea Cor.	„ 27	637	644	+ 7	48	41,545	— 668
South Shields Cor.	Mar. 2	794	1,054	+ 260	48	46,621	+ 6,371
Sunderland Corporation	„ 3	1,502	2,031	+ 529	48	89,827	+ 10,673
Sunderland District	Feb. 13	589	849	+ 260	15	12,026	+ 2,628
Swindon Corporation	„ 27	206	288	+ 82	47⅔	13,072	+ 3,242
Torquay Tramways	„ 21	440	660	+ 220	8	4,841	+ 1,521
Tyneside Trys. & Trmrds.	„ 20	610	857	+ 246	8	5,862	+ 1,419
Wallasey Corporation	Mar. 2	1,169	1,472	+ 303	48⅔	74,924	+ 10,434
Walsall Corporation	„ 2	770	1,118	+ 348	48	46,366	+ 9,119
Walthamstow U.D. Coun.	„ 2	958	1,125	+ 167	48	58,310	+ 7,325
Warrington Corporation	Feb. 21	482	744	+ 262	47	28,261	+ 4,848
West Ham Corporation	„ 28	3,022	3,592	+ 570	47⅓	174,306	+ 22,450
Wigan Corporation	„ 21	1,647	2,200	+ 553	48	98,360	+ 17,600
Yorkshire (West Riding)	Mar. 3	1,862	2,496	+ 634	9	21,120	+ 5,082

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Mar. 4	£52,136	£56,938	9	£480,082	+ £29,774
Auckland (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Dec. 20	3,981	4,127	40	32,971	+ 360
Brazilian Traction (Mlrs.)	Dec.	7,312,000	8,069,000	52	92,200,000	+ 7,315,000
Brisbane	Feb.	29,800	32,009	8	66,509	+ 3,689
British Columbia $	Dec.	496,959	555,555	26	2,923,669	+ 258,275
Buenos Aires Lacroze	Jan.	38,142	38,902	30	269,377	— 340
Burmah Tram. & Light Rs.	Jan.	23,802	25,429	26	161,251	+ 144
Calcutta Rs.	Mar. 2	69,485	75,751	9	640,654	+ 21,288
Cape Town	Jan.	18,440	19,707	..	..	..
Carthagena and Herrerias	Feb.	3,223	4,031	9	8,042	+ 837
Cordoba	Nov.	12,836	13,339	34	108,715	— 2,137
East India	Feb.	1,570	1,318	30	8,767	— 5,826
Hong Kong $	Jan. 5	12,188	12,246	1	12,246	+ 58
Kalgoorlie	Oct.	2,716	2,795	43	26,923	+ 940
La Plata	Jan.	4,315	4,711	4	4,711	- 396
Lima	Jan.	36,841	43,536	4	43,536	+ 6,695
Lisbon Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Feb. 15	38,622	37,363	26	115,641	+ 10,215
Manaos	Nov.	142,853	146,047	..	..	..
Manila $	June	59,432	73,900	..	..	..
Montevideo	Feb.	32,304	34,573	17	135,674	+ 10,261
Pernambuco	Mar. 3	3,387	4,347	9	41,976	+ 9,704
Peruvian $	Feb.	844,770	925,410	34	8,203,030	+ 917,633
Port Elizabeth	Jan.	4,498	4,779	..	..	..
Rangoon	Feb.	4,605	5,662	8	11,023	+ 1,785
Shanghai $	Oct. 3	24,953	28,458	..	..	..
Singapore $	Jan. 5	13,105	13,119	1	13,119	+ 14
Toronto $	Nov.	911,529	1,052,000	47	10,986,998	+ 1,161,954
Winnipeg $	Nov.	282,899	305,881	47	3,039,397	+ 16,227

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By R. BICKERSTAFFE HOLT,

Highways and Permanent Way Engineer, City of Leeds.

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THE Tramway & Railway World
WITH MOTOR TRAFFIC SECTION

Founded 1892. LONDON, MARCH 14, 1918. VOL. XLIII.

URGENCY OF RAILWAY ELECTRIFICATION.

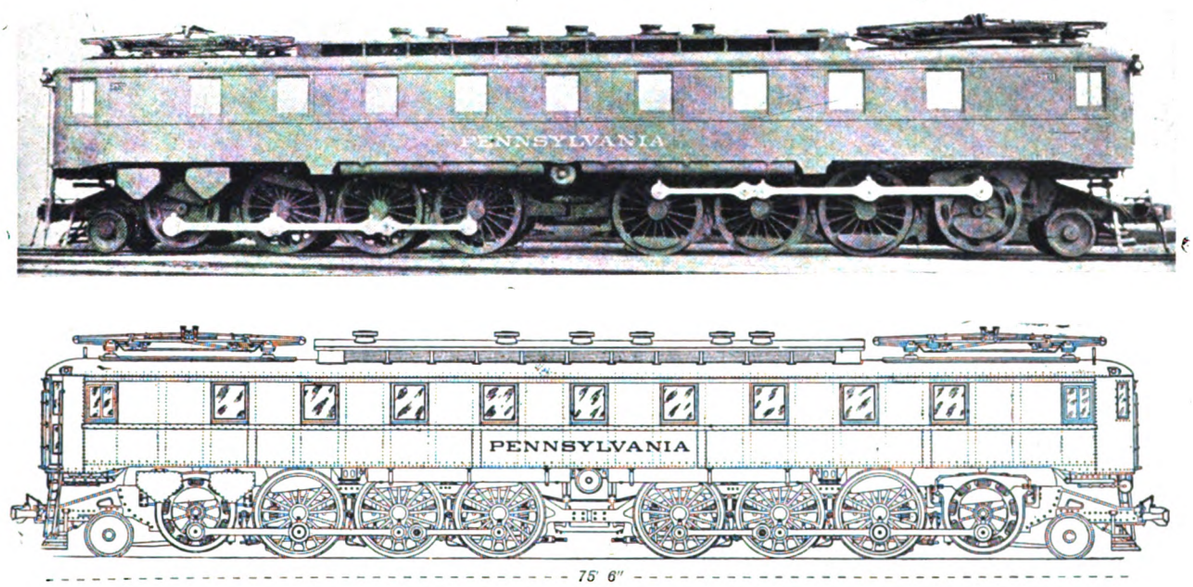
AN AMERICAN POINT OF VIEW.

The importance and the necessity of an extension of the process of converting steam railways to electric traction, even while the great war is going on, are being advocated in the United States. The conditions there are, of course, different from those in this country, but some reasons and arguments are being put forward which are not without interest in Great Britain. Two contributions of authority on the subject have recently been published in American technical ournals. Both the writers are connected with the Westinghouse Electric and Manufacturing Company, one being Mr. F. H. Shepard, director of heavy traction, and the other Mr. F. E. Wynne, engineer of the railway section of the general engineering division.

Mr. Shepard, in the course of his article, which is headed "Further Railroad Electrification Important," says:—In no other period of our history has the necessity of adequate means of transportation been more evident. We are now at war, and one of our most important duties is to transport a vast amount of goods over long distances. Even under ideal conditions this would be a herculean task but unfortunately for the last five years or more the railroads have been obliged, mainly because of adverse legislation, to follow a halting programme of development, and this condition is proving a most serious handicap to the prosecution of the war. Much has recently been accomplished, but a further improvement can be secured by means of electrification. That change can help the railroads and the nation in three ways:—

1. By increasing the capacity of existing track and terminal facilities.
2. By decreasing the consumption of fuel.
3. By conserving the labour necessary for operation and maintenance.

In regard to the first of these, electricity can accomplish it by permitting the use of locomotives of larger power, higher speed, and greater mobility than is possible with steam operation. The largest type of electric freight locomotive built by the Pennsylvania Railroad is capable of developing 7,000 H.P. for brief intervals, and 4,000 H.P. continuously. Under special conditions it is practicable to operate trains requiring an input of 20,000 H.P., including both road locomotive and helper. Such a concentration of power will expand enormously the traffic possibilities on existing tracks, and will make additional tracks unnecessary. On the Norfolk and Western Railroad electric locomotives have doubled the capacity of the system at an expense considerably less than the cost of a corresponding increase in the number of tracks. The power input for single trains is about 11,000 H.P. for starting and 8,000 H.P. for continuous operation. The features of electric locomotive operation also simplify



Pennsylvania Railroad's Largest Type of Electric Goods Locomotive Capable of Developing 7,000 H.P.

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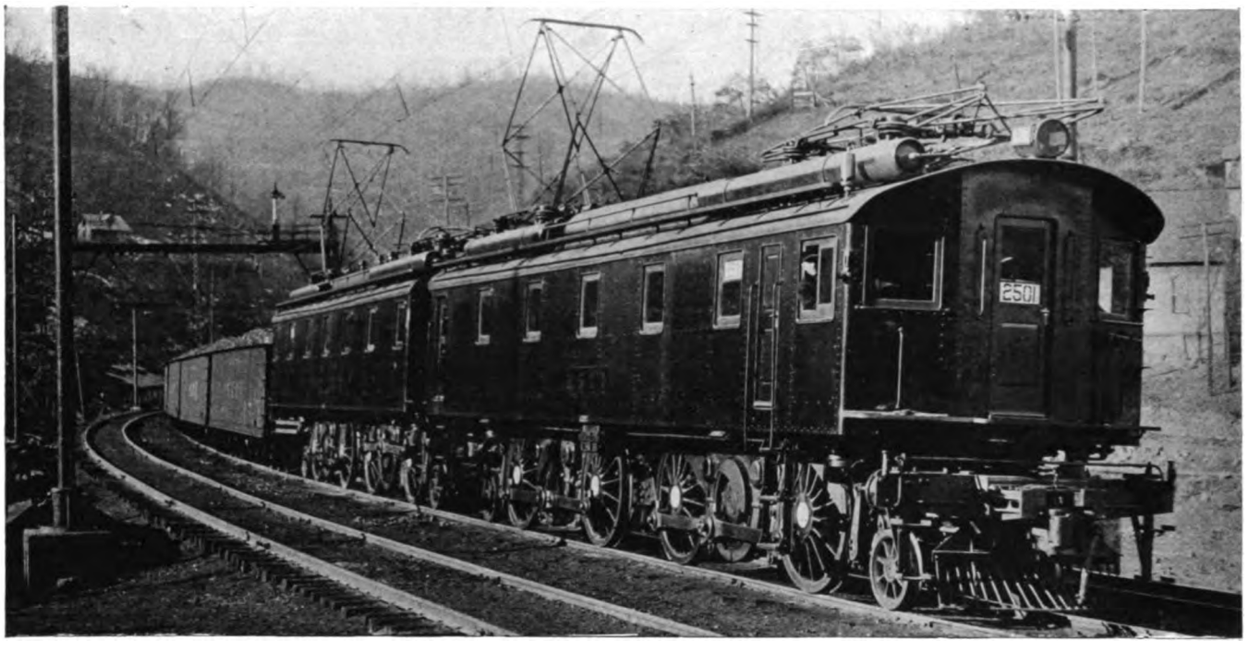
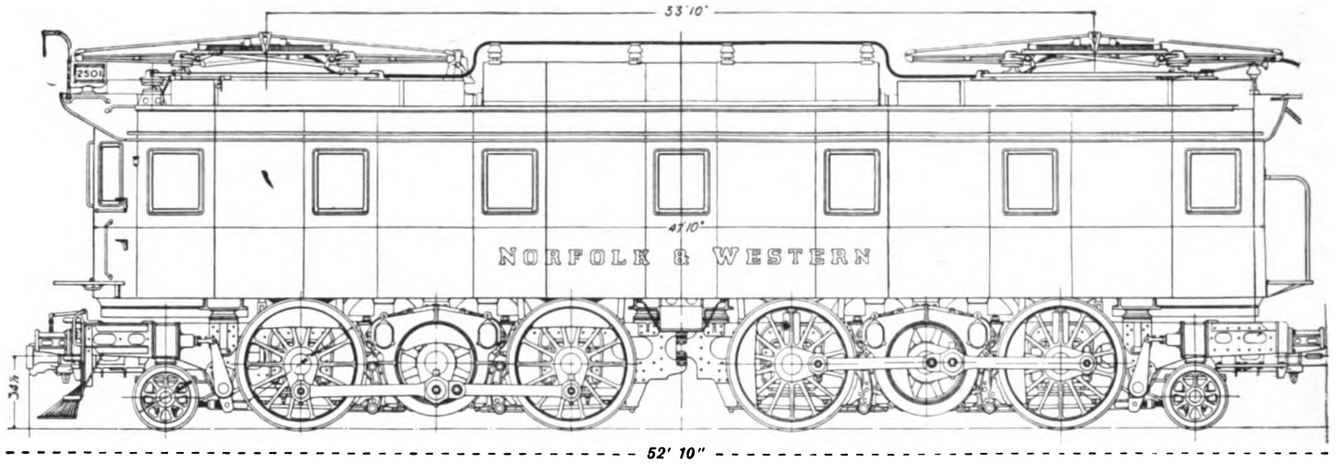
and expedite yard movements and train despatching. In regard to the conservation of fuel, the aggregate power generated in United States steam locomotive boilers is about 50,000,000 H.P., and to produce this one-quarter of all the coal mined in the States is consumed. By a curious coincidence this total horse-power is just about equal to the amount of water power that is going to waste in the country. Hence, if the hydro-electric power were used for railroad operation, 150,000,000 tons of coal would be saved annually, and the cars and crews needed to haul this coal would be released for other purposes. Moreover, owing to the fact that the load factor of the individual number of men can handle a much greater volume of traffic. Again, electric locomotives require much less labour for maintenance than steam locomotives. On the Chicago, Milwaukee and St. Paul Railroad the electric locomotives run 500 miles before receiving terminal attention, whereas steam locomotives are ordinarily taken to the roundhouse after runs of 100 miles. On the Norfolk and Western, twelve electric locomotives have replaced thirty-four Mallet steam locomotives, so that between the greater capacity of the electrics and their greater time in service, the reduction in the amount of labour necessary to operate and maintain them is most marked. Moreover,





Electric Locomotive—Norfolk and Western Railway.

locomotive is less than 25 per cent., power-stations having a combined capacity of 12,000,000 H.P. would suffice to operate the entire system of railroads. For geographical reasons it is impossible to generate all railroad power hydraulically, and steam stations must be relied on to supply part of it. But one pound of coal will produce as much power at the locomotive as two pounds or more under a locomotive boiler. Hence it is evident that enormous savings in fuel are possible even when steam stations are used.

With respect to the conservation of labour, in the first place electrification releases an army of mine and railroad workers for other purposes. Second, a given because of the simple construction of electric locomotives, even major repairs, such as the replacement of a motor, can be accomplished in a few hours, in striking contrast to the length of time required for important repairs to steam locomotives. Finally, because electric locomotives are independent of fires, steam pressure, fuel and water, electric operation secures an economy of yard and terminal labour.

A number of factors are directing constructive thinking toward electrification, including the scarcity of labour, the scarcity and high cost of fuel, the growth of traffic, the increasing capacity and efficiency of generating plants, the increase in the size of trans-

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mission systems, the improvements in trolley design and construction, improvements in the standard of freight car equipment which will permit trains of greater tonnage to be hauled, and secure greater reliability.

The further upbuilding and improvement of the transportation facilities of the country should unquestionably be the dominating part of activity after the war, so that certain electrification, desirable but deferred, should now be planned for, to form part of the nation's immediate constructive programme as soon as opportunity affords.

Electrification as a War Measure.

Mr. Wynne in a paper which has the above heading also points to the necessity for increased railway facilities, and says it is pertinent to consider what electrification is capable of doing now. The importance of the conservation of fuel is emphasised.

At first glance electrification may seem not to tend toward the conservation of materials. The construction of overhead lines, sub-stations, and possibly power-stations calls for a large amount of material. On the other hand, fewer electric locomotives than steam locomotives are required to produce the same quantity of service. When congestion is becoming unendurable electric operation will give relief. The steam locomotives released by electrification and the cars relieved from hauling railroad fuel take the place of new locomotives and cars for increasing the capacity of unelectrified divisions.

Railroad electrification helps to conserve man power both directly and indirectly. Since it has been proved practicable to build, and operate with one engine crew, electric locomotives more powerful than steam locomotives, fewer enginemen are required to handle a given traffic electrically. Not only can larger trains be operated at higher speeds, but delays on the road are materially reduced, and there is less overtime. The operation of larger trains at higher speeds also decreases the number of train crews for a given traffic. Material reduction in the roundhouse and shop labour of caring for and repairing motive power is found with electric locomotives. This is effected largely by the elimination of the boiler, fire-box, and tender, which are essentials of the steam locomotive, and by the longer time possible between "shoppings."

One of the greatest benefits derived from electrification is the increase in track capacity without laying additional rails. The good results are obtained through the ability to concentrate in an electric locomotive greater power than in a single steam locomotive, to operate locomotives in multiple, and in the electric locomotive's smoothness of control, its greater availability for service, the greater mileage between overhauling periods, the reduction in railroad fuel handled, the less serious nature of road failures, the elimination of intermediate engine terminals, and the definite speed of operation on the road.

The movement of trains at higher speeds with fewer delays and less damage enables greater mileage to be secured from cars in a given time. This saves time in furnishing any quantity of transportation service, and the time thus conserved is equivalent to increasing the number of cars available for service. In fact, it is more than equivalent, for there is less likelihood of congestion in handling a certain traffic with 1,000 cars than if 1,200 cars are required for the same traffic.

Electrification is admirably adapted to "widening the narrow places" in the railroads. The greatest congestion, aside from terminals, occurs on roads handling ore, fuel, grain, and munitions. The suggested use of Government (funds where necessary) to assist in relieving this congestion appears to be both legitimate and logical. Government assistance might be secured in getting priority of manufacture also, since the apparatus to be built would be utilised to improve transportation facilities largely for Government business. The manufacture of a number of electric locomotives would release a much larger number of steam locomotives, and take some of the present burden from the steam locomotive factories by reducing the number of boilers, tenders, engine frames, and running gears which would have to be built for a given amount of relief.

Not only must maximum capacity of existing facilities be secured, but increased facilities at the weak points of our transportation systems should be provided with the utmost speed. Labour should be diverted from non-essential channels to the construction of these additional facilities. The diversified character of the materials and apparatus used and the greater service obtained from equal weight of material in electrical service make it practicable to secure a definite increase of railroad facilities with electrification more readily than by building additional tracks, widening tunnels and bridges, and building additional steam locomotives. Incidentally, in many cases, electrification is economically the best method of securing such increase in track capacity. It appears therefore that intelligent consideration of the present situation, the probable duration of the war, and the future of the country, should lead to some electrification immediately and to the greater use of electric power by railroads when peace comes.

Electric Locomotive in Express Passenger Train Service—Chicago, Milwaukee and St. Paul Railway.

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AMBULANCE TRAIN FOR THE U.S.A. ARMY.

CONSTRUCTED BY THE LANCASHIRE AND YORKSHIRE RAILWAY.

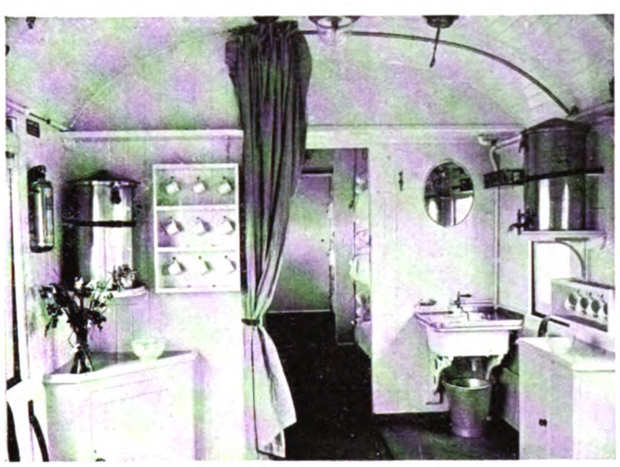
The Lancashire and Yorkshire Railway have just completed at their carriage and wagon works, Newton Heath, an ambulance train for the United States Army, and we are indebted to Sir John Aspinall for the following description and accompanying photographs. It is the sixth ambulance train constructed by the Lancashire and Yorkshire Company, two of which have been constantly used in Great Britain since 1914, and four have subsequently been built for use on the continent.

The present train consists of 16 bogie carriages with a total length of 316 yards and weighs 442 tons. In general design it is similar to the trains previously built for the British War Office to convey our sick and wounded soldiers to the base hospitals on the continent, which the public first had the privilege of visiting on this company's system.

There are altogether 418 cots and berths in the train for patients and personnel, and when the bottom cots are used for sitting-up cases accommodation is provided for a total of 650. The train has a water supply of 3,100 gallons, and electric light and fans are fitted throughout and a bath room is provided, and ample accommodation for stores. The letters "U.S." are a distinctive feature on the khaki exterior, together with the car and medical numbers.

Pharmacy Car.

Every detail shows the greatest care and thought given to the comfort of the sick and wounded, and the convenience of the medical officers, nurses, non-commissioned officers, and orderlies in carrying out their duties; throughout the wards, pharmacy, kitchens, staff, personnel, and stores cars, everything is beautifully finished, and advantage has been taken to use all the space in a most effective manner.



Infectious Ward Car—Attendants' Compartment.

Ward Car—View from Attendants' Compartment.

Ward Car with Bottom Cots Arranged for Sitting-up Cases.

Ward Car with Cots Arranged for Lying-down Cases.

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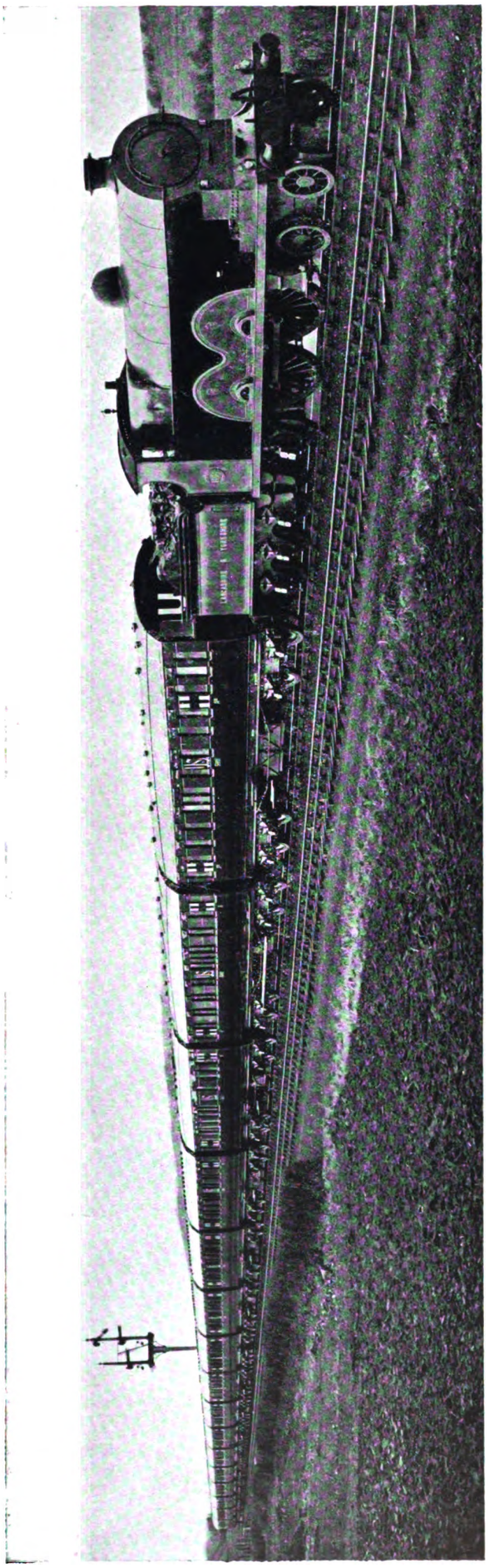

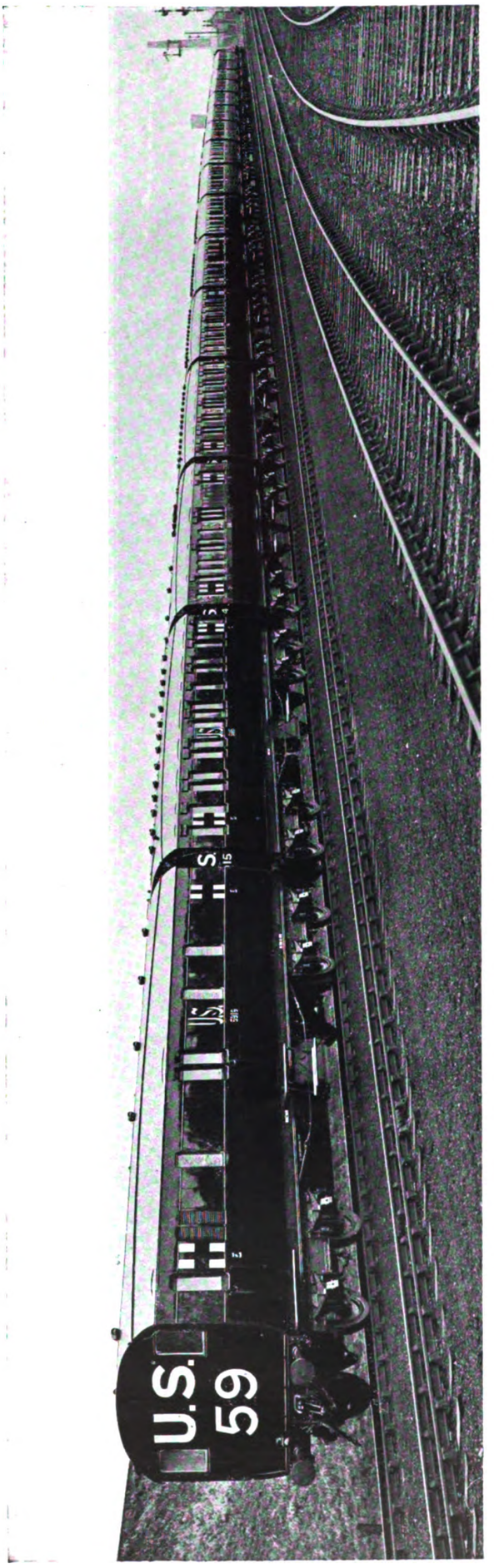

General Views of Ambulance Train Built for the United States Army by the Lancashire and Yorkshire Railway.

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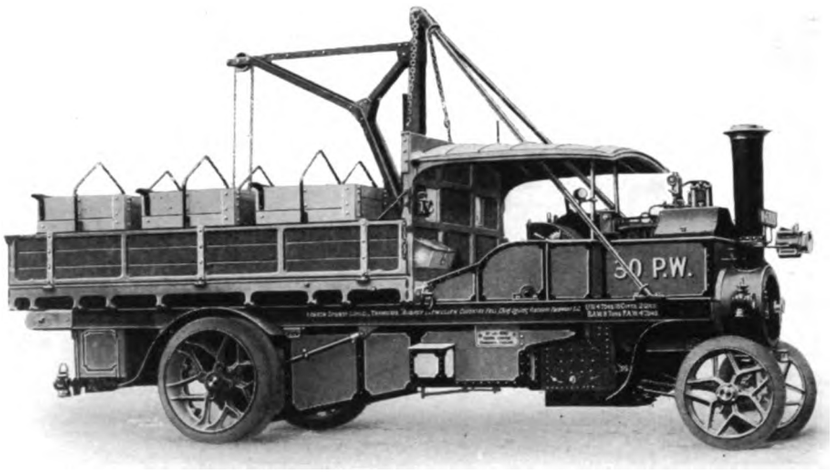
HAULAGE OF MATERIALS FOR LONDON TRAMWAYS.

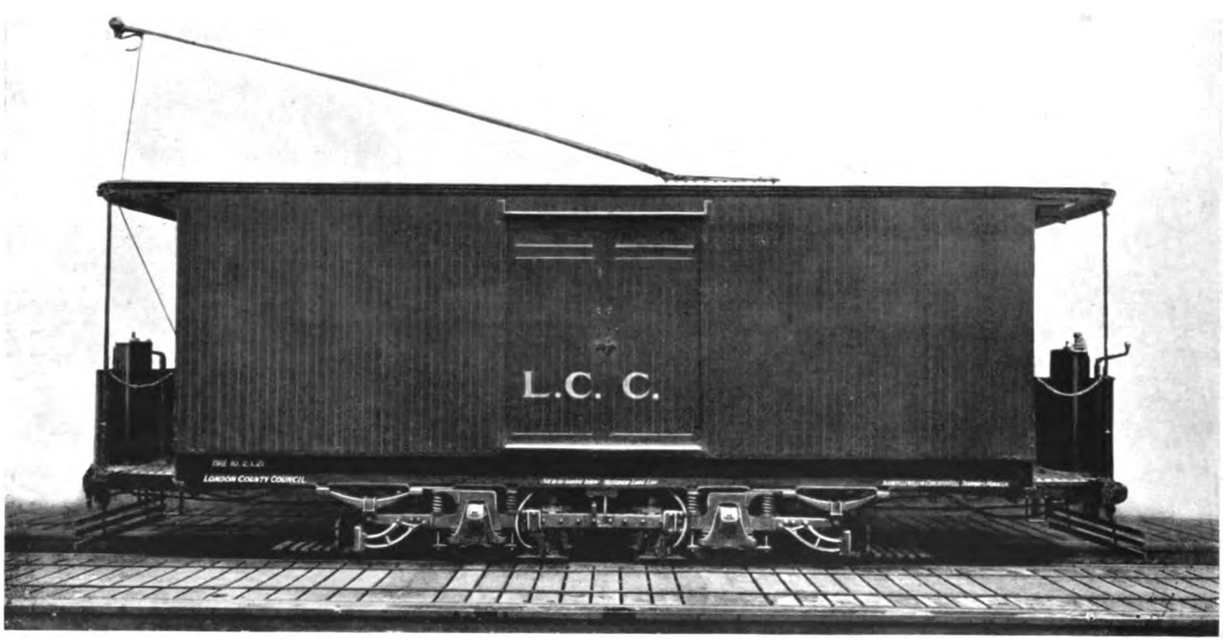
As the tramway undertaking of the London County Council is the most extensive in the United Kingdom, the department cannot be said to be well provided with goods wagons for the haulage of its own materials. Several provincial tramways possess a large number of such vehicles with open wagon and box bodies, the former being used in some cases, as for instance at Huddersfield, for the conveyance of coal to generating stations and depots, as well as for equipment materials. Some time ago the London County Council possessed only eight rail cars for transporting stores, one of which is shown in the accompanying illustration. The department also owned the following motor vehicles :—Eight petrol motor cars, sixteen lorries (eleven petrol and five steam), and two petrol auto-carriers.



A Foden Steam Wagon owned by the L.C.C. Tramways.

Undoubtedly there would be a larger number of London County Council conveyances available for haulage work if there were more connecting links between the southern and northern systems—links that are conveniently situated. At present there are only two, viz., the subway from the Victoria Embankment and the line across Putney Bridge. The outbreak of the war has prevented the effort that would have been made to carry out the recommendations for linking up and for the abolition of dead ends. These schemes were contained in the report prepared at the instance of the Highways Committee by M. Mariage, general manager of the Paris Omnibus Company, in 1914. No startling new proposals were contained therein, and the report itself served to confirm the wisdom of the schemes for the abolition of dead ends, and for carrying out extensions, which the Highways Committee has from time to time put forward in the Holborn, Bloomsbury, Aldgate, and Tower districts, upon the recommendation of Mr. A. L. C. Fell, general manager.

On the existing tramways the greatest want in joining up the two divisions south and north of the Thames is between Blackfriars Bridge and Farringdon Street. The gap here is about a quarter of a mile, but unfortunately the City Corporation has opposed even the short extension necessary to bring the tramways to the northern side of Ludgate Circus. Two years before the war the County Council proposed to construct a subway connection to the Aldersgate terminus as a portion of the scheme for the erection of the projected St. Paul's Bridge, but here opposition was encountered from the authorities of St. Paul's Cathedral.



Single Truck Box Van Used on the L.C.C. Tramways.

The box van running on the single truck shown in the illustration is fitted for both conduit and overhead

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traction. It is of great utility in conveying materials between the various depots and from the central car works at Charlton, where there is a siding to the South Eastern and Chatham Railway. Reference to the siding is a reminder that the Council's tramways pass so many important railway goods stations that many tons might be carried on the tramways if the necessary short sidings were in existence. At the present national crisis, and with the shortage of transport facilities, such transit would be invaluable, not only to the shortsighted railway companies which have foolishly opposed tramway extensions in the metropolis, but to the public and the State. It is not beyond the bounds of possibility that before long the Tramways (Board of Trade) Committee may decide that it is imperatively necessary for the tramways to be extended into a number of goods depots.

A large amount of materials, such as wheels with worn tires and also axles, as well as rails and setts for track reconstruction, is hauled by means of steam wagons. Of these vehicles the department has several, including the Foden wagon, of which an illustration is given on the preceding page.

TRAMWAY AND OMNIBUS EMPLOYEES' WAGES.

NATIONAL SETTLEMENT EFFECTED.

Numerous meetings took place early in March in London and the provinces in connection with the demands of tramway and omnibus employees and their threat to strike. The points in dispute were two-fold. The Federation demanded on behalf of its members an extension of the award of January 8, 1918, by which the transport workers were granted an increase of £1 per week in excess of pre-war rates. The other point was the insistence on the part of the National Transport Workers' Federation that the tramway and omnibus proprietors, including Corporations, should recognise that union as a medium of settlement with their employees. The Executives of the Amalgamated Association of Tramway and Vehicle Workers and the London and Provincial Union of Licensed Vehicle Workers had tendered seven days' notice to expire on March 9 unless their demands for 20s. over pre-war rates, and proportionate rates for overtime, were conceded, the increases to be retrospective from January 1.

On March 7 the Minister of Labour met in conference in London representatives of municipal tramways, tramway and omnibus companies, and the Transport Workers' Federation, the latter representing the two tramway unions. It was agreed to refer the dispute to the Committee on Production, and the hearing before that body took place on March 8. Sir George Askwith later in the same evening issued his award granting the increase.

The award states that men aged 18 years and over, and the grades of women aged 18 years and over whose terms of employment include an undertaking that they shall be paid the same rates as the grades of men whose places they have filled, shall receive such an advance as would give £1 a week over the pre-war rates of the grades concerned, payment to be made on the basis of a week of six days or shifts. Women aged 18 years and over who are not covered by this decision are to receive an advance of 4s. a week, subject to a maximum of 20s. a week over the pre-war rates of the grades concerned. Girls, boys, and youths under 18 are to receive such an increase as will give them half the additional advances provided by the committee's award to the men or women, as the case may be, in the same undertaking. The advances come into operation on the pay-day in the week beginning March 4, 1918. The award does not include women to whom the provisions of the Orders made by the Minister of Munitions under the Munitions of War (Amendment) Act, 1916, apply.

NEW FUEL COMMITTEE.

Mr. Percy Still, M.I.E.E., is the hon. secretary of a new committee recently appointed by the Controller of Munitions Mineral Oil Supplies, and styled the Heavy Oil Engine Fuel Committee. The purpose of this committee will be to assist the Controller in connection with the subject of fuel oil supplies, and particularly as regards the use of tar oil as fuel for Diesel engines, and to methods of adapting such engines for this fuel. The committee will be composed of the nine members of the general committee of the Diesel Engine Users' Association, together with two additional members nominated by the Institution of Electrical Engineers.

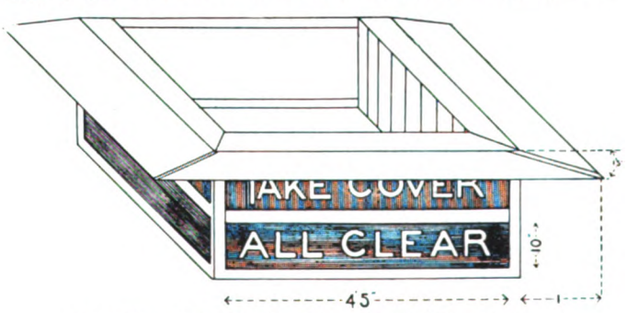
A TRAMWAY AIR-RAID WARNING SIGN.

The accompanying illustrations give an idea of a warning and "all clear" sign which has been devised by Mr. T. B. Goodyer, general manager of Croydon Corporation Tramways, for use on the occasion of enemy air raids. In addition to the audible warnings arranged for in London, several of the local authorities in and near the metropolis use signals consisting of various coloured lights. These have been tried on high buildings and also on tramway feeder pillars. Mr. Goodyer's experiment utilises a tramway pole, and

A Croydon Tramway Air Raid Signal.

instead of merely using a light of one colour for warning and of another colour for safety, he displays the words "Take cover" or "All clear", as the case may be, in illuminated letters. The disadvantage of coloured lights is that people have to learn their significance, and afterwards to remember it, and even then there are a good many coloured lights on vehicles which might lead to confusion. But nowadays at least everybody except young children can read, and there is no mistaking the words on this signal.

The apparatus has been erected on a pole at a junction in Croydon, and the legend is displayed on three sides. A light box framework is divided horizontally into two chambers, each having its set of electric lamps. The latter, when aglow, shine through the lettering, which is thus illuminated in the same fashion as a tramcar des-



The Signal is Visible from Three Directions.

tination indicator. The lamps, of course, are on two circuits. When an alarm is received a man switches on the lamps which illuminate the "Take cover" lettering. As soon as the information comes that the German raiders have been driven back to sea this bank of lamps is switched off and those behind the "All clear" notice are switched on. It will also be noted that the box has a canopy which prevents any of the illumination being visible from above. It will thus be seen that the device is quite simple. For its success, of course, it is necessary that a man should be detailed who will get the first information of a warning, and who will also be speedily informed of the safety notice. The police authorities have expressed satisfaction with the arrangement.

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Sheffield's Notable Bill.

The Corporation of Sheffield is to be congratulated upon having read aright the indications of tramway shortcomings which the war has emphasised and for embodying remedial measures in a Bill which is to come before the present Session of Parliament. Several of the clauses are concerned with the powers that should be obtained if the transport of goods is to become successful. The absence thereof was emphasised by more than one speaker in the discussion on the subject of goods haulage, dealt with in the joint paper submitted to the Municipal Tramways Conference of 1916. The longer the war continues the more accentuated becomes the drawback arising from the absence of goods traffic on tramways. Even before the railway companies were called upon to send many thousand units of their rolling stock to the war areas, their systems were overburdened, to the detriment of the business of the country. Munitions contractors had to acquire motor vehicles in order to escape delays on the railways, and the necessity of conserving motor fuel is involving controlled establishments and the commercial community in further difficulties. To overcome these drawbacks will necessitate great efforts on the part of the Road Transport Committee recently appointed by the Board of Trade. As that committee's terms of reference include electrically propelled vehicles, it is possible that tramways may be authorised by a Board of Trade Order to adopt one or more of the proposals figuring in the Sheffield Bill in relation to goods haulage. Although these powers have aroused criticism from the Manchester headquarters of the Federation of Vehicular Associations, on the whole they may be regarded as necessary to efficient working in normal times. Viewing the Bill in the light of the present transport crisis, and its bearing upon the distribution of food supplies, the Legislature should not hesitate to sanction the essential features. In that event other undertakings are likely to experience no difficulty in securing what will become known as the Sheffield Clauses. The most prominent of these seeks sanction to run trucks of the railway gauge on tramways, with sides extending further over the rails than the general law permits. Equally important is a request for forming junctions with lines of private firms, light railway and tramway companies, to collect, forward, and deliver goods from or destined to those lines, and to provide any kind of vehicles required to carry on such receiving and forwarding business. The absence of sidings, which this clause is intended to remedy, has militated more than anything else against the introduction of goods haulage. In a few towns junctions have been constructed under existing enactments, and a general extension ought to raise no difficulty. Equally necessary is the provision of any kind of road vehicles required to carry on a receiving and forwarding business. Owing to the decision given a few years since in the lawsuit brought by public carriers at Manchester against the Corporation of that city, tramway undertakings are prohibited from providing this necessary adjunct to their parcel services. The remaining clauses to which objection is taken by the Vehicular Federation do not relate to goods traffic, but with the exception of one clause they may be regarded as necessary for the efficient working of tramways. The exception relates to authority to let out carriages, motor cars, and other vehicles on hire to pic-nic,

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wedding, and other parties. Another clause provides a remedy for overcrowding of tramcars, viz., by charging fares for the whole route to short-distance passengers. Whether this application is acceded to or not, it may well prove to be the only solution of the problem of short-distance passengers crowding out the more profitable fares. Support should be forthcoming from motor vehicle owners for the proposal to divert slow-going traffic from certain streets to be specified in a by-law, a procedure that has received strong approval in regard to crowded streets in London. Another clause would permit an increase of the width of roadways by reducing the footways on either side of any street. This course is occasionally allowed in tramway construction. General powers might advantageously be given subject to a proviso that any curtailment of footways must be sanctioned by a majority of the Corporation. More disputable proposals comprise the denial of the right of appeal to any court except a police court to owners who may object to brackets, wires, and apparatus connected with trolley traction being fixed to their property, and the exemption of the Corporation from the provision of the Police Act, the Locomotives on Highways, and other general enactments.

Tramway Passengers and Overtaking Vehicles.

In our issue of December 13 last we reviewed briefly the present state of the law in reference to tramway cars and overtaking vehicles. Particular attention was called to the Motor Car Orders which came into force in the three kingdoms early in 1909, under which the driver of a motor vehicle is left to his own discretion as to which side he should take on overtaking a tramway car. The onus is left on the driver to use all proper care. It was also explained how Glasgow Corporation in 1915 obtained sanction for a by-law obliging the driver of any vehicle proposing to pass on the near side of a tramcar standing at a stopping-place to draw up before reaching the stopping-place and wait until the roadway is clear of passengers entering or leaving the car. This by-law was called for because the onus on the vehicle driver above referred to had frequently not been discharged, and there were numerous accidents in consequence, not to mention the cases where the tramway passengers save themselves by scattering like a flock of sheep. The Glasgow by-law does not appear to have been adopted in any other place, but in view of a legal judgment given in February, perhaps other tramway authorities will be encouraged to apply for similar powers. This important judgment was given in an appeal to the Sheriff-Principal in Edinburgh Sheriff Court. The action was raised by David Cutler against Sym and Company, engineers, Broxburn, and the Sheriff-Substitute awarded him £35 damages for personal injuries sustained through being knocked down by a motor car belonging to the defenders while he was alighting from a tramcar at a stopping-place in Cowcaddens Street, Glasgow. The defenders pleaded that the pursuer contributed to the accident by failing to look to see whether any vehicle was approaching. On appeal, the Sheriff-Principal has affirmed the decision. It is therefore clear that under the Glasgow by-law there is no obligation on the tramway passenger crossing the space between the stationary car and the footpath to look out for approaching vehicles. In other words, the plea of contributing negligence, if put forward by the owner of the overtaking vehicle, avails nothing. The judgment seems right on the face of it, because the by-law explicitly says that the driver shall draw up and wait until the roadway is clear of passengers entering or leaving the tramcar. There seems to be no good reason why this Glasgow by-law, with the valuable inference now established in regard to it, should not be applied all over the country. Tramway authorities might well bring pressure to bear on the Government, because in these days of far-travelling motor vehicles it is specially desirable that such a law should be uniform. It is not too much to say that passengers entering and leaving cars, if they do not keep a vigilant look-out, are certain to be run down sooner or later by careless drivers of overtaking vehicles. "Eternal vigilance is the price of safety," but in this case the vigilance can be much reduced if the law is brought into conformity with the Glasgow rule. The rebutting of the plea of contributory negligence puts the copestone on this little edifice of safety. Why not have the benefit

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extended to the whole country? There seems to be no objection, except that there would be a little delay to other vehicles.

Underground Railway Services.

The very unusual fact that three small mishaps, causing some delay to traffic, occurred in one day recently on the London underground electric railways serves but to emphasise the wonderful efficiency of the services, even in these days of special difficulty. If the public were not so much accustomed to it, the clock-like regularity of the running of the trains on excessively short headways would excite general admiration. On the central section of the District Railway and on the southern half of the Charing Cross, Euston, and Hampstead Railway the traffic is specially heavy, and trains pass any given point in something approaching a continuous procession. Conditions arising out of the war have produced special difficulties. The reduction of omnibus services on the streets, and to a certain extent of tramway services, coupled with a general increase in local travel, have added greatly to the number of passengers using the underground lines. During the busy hours the trains, though run as frequently as it is possible to run them, are packed almost to overflowing. The work has to be tackled by a reduced staff, as so many of the men have joined the forces. On the repairs and maintenance side the trouble from scarcity of labour has added to it the scarcity of materials. The task of keeping the greatest possible number of cars on the road is one of extraordinary difficulty, and owing to the heavy traffic demands the number of spares has to be kept as low as possible. The actual percentage of spares is exceedingly low, and yet stoppages on the railways through breakdown are astonishingly few. The speed of the trains, allowance being made for the frequency of the stations, is very high, due to rapid acceleration and braking, and in many cases it is further raised by the trains passing certain stations without stopping. Such intensified railway working is rendered possible by the admirable system of automatic signalling. It may be affirmed that the London underground railways are second to no city electric railway system in the world.

TRAMWAYS (BOARD OF TRADE) COMMITTEE.

MEETINGS IN THE DISTRICT AREAS.

The Tramways (Board of Trade) Committee in the middle of February arranged for meetings of representatives of tramway undertakings to be held in the nine areas into which they have divided the British tramway systems.

Two representatives at least of each tramway undertaking were invited to attend the meetings for the purpose of appointing local advisory committees. The meetings arranged for duly took place, and reports of them follow:—

THE METROPOLITAN AREA.—MEETINGS IN LONDON.

At the invitation of the Tramways (Board of Trade) Committee, a meeting of representatives of tramway undertakings in the Metropolitan, or No. 1 area, was held on February 27, at 7, Whitehall Gardens, London, Mr. James Devonshire, chairman of the Tramways Committee, presiding. The other members of the National Committee present were Messrs. A. L. C. Fell, J. B. Hamilton, and R. J. Howley.

Mr. Devonshire, referring to the aims and objects of the committee, quoted from the speech of the President of the Board of Trade when he intimated to representatives of the two Tramway Associations the intention of the Government in regard to the matter. He said:—"This question, what I may call local service more particularly, and, of course, tramway service in all parts of the country, has been engaging not only the attention of the Board of Trade, but the attention of the Ministry of Munitions as well, for some time. Various problems have been raised from time to time by different undertakings; and these problems have taken various forms. We have been invited to consider the question of increasing fares, the question of rails, materials for the repair of rolling stock, questions of services such as the inadequacy of existing services, and the establishment of additional services in order to meet new developments arising out of the war. These problems have been engaging the attention both of the Ministry of Munitions and the Board of Trade arising either out of public demands or through representations made by the various undertakings. I know as well as you do that all undertakings are not in the same position to-day. It is very difficult for us on the Board of Trade and the Ministry of Munitions as well to deal with these problems separately. They are problems not affecting one department alone, but affecting both of the departments, and in consultation with Mr. Kellaway, who as you know is Parliamentary Secretary to the Ministry of Munitions, we have come to the conclusion that it is desirable that we should set up an organisation to which all of these undertakings can refer their difficulties, and which would on behalf of the Ministry of Munitions and the Board of Trade deal with the problems in which they are particularly interested from their point of view. I quite appreciate that in the circumstances there is a real need for some organisation and some means whereby all these great undertakings can have accees to it, so that their problems, which I cannot feel will grow less as time goes by, can be all satisfactorily dealt with as circumstances will permit."

As regards the organisation of the committee, as tramway undertakings had already been informed in a circular letter issued on January 29, the country had been divided into nine areas; areas Nos. 1, 2, and 3 had been referred to the supervision and care of one group, which was known as "A" group, and the members of that group who were present were Mr. Fell and Mr. Hamilton. Meetings had been held at Glasgow for area No. 8, at Newcastle for No. 7, at York for No. 6, at Liverpool for No. 5, at Birmingham for No. 4, and at Cardiff for No. 9. In all those places the meetings had resolved to appoint a local advisory committee, as they were that day asking areas Nos. 1, 2, and 3 to do, to confer with the area sub-committees. They had besides as part of their organisation four divisional committees, who were charged with the important questions of (1) labour, (2) priority for material, (3) rolling stock and all questions dealing with cars and parts of cars, and (4) rails and permanent way. Mr. Hamilton had personally given a great deal of time to the question of the supply of labour, bringing to bear upon it a great deal of experience which he had gained at the Shipyard Labour Department of the Admiralty. In regard to the priority question, the Ministry of Munitions had already seen the importnace and desirability of giving the Tramways Committee a seat on the Priority Committee, and from this time forward they asked all tramway undertakings throughout the country to send to the Tramways Committee direct all applications for priority of materials, as that would tend to greater efficiency, because they had a member, Mr. Howley, who attended meetings of the Priority Committee bi-weekly, on Tuesdays and Fridays, and if he was not able to attend, his alternative, Mr. McElroy, general manager of Manchester Corporation Tramways, took his place.

With respect to the important question of rails, he knew of one concern that quite early in the war made application to the Ministry of Munitions for permission to get rails rolled in order to enable them to maintain their undertaking in a proper condition, and the Ministry gave a point-blank refusal. They recommended the

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undertaking to make application to the United States. An order was placed in America for 600 or 800 tons of rails, and delivery was promised early in 1918. When that country came into the war there was no prospect of obtaining material from that source. This was where their close connection with the Ministry of Munitions was of vital importance to the industry. They urged upon the Ministry the great importance of their reconsidering the question of rolling rails, and the committee thought that they now had very good hopes of getting quite a substantial quantity of rails rolled in the coming summer, but it was really only in respect of essential undertakings that much relief could be afforded. There was a great deal of work in front of them, and the Ministry of Munitions, through their M.I.T. department, had already surveyed the whole country from the tramway point of view, and had prepared papers relating to each undertaking in the country, and these had been handed over to the Tramway Committee for examination.

Those papers would more or less determine what were essential and what were non-essential undertakings, and the local advisory committees would help the committee to arrive definitely at conclusions. They would have to give an account of the position to the Ministry of National Service at an early date, because there was not enough labour to go round. There was a daily shortage of some 65,000 men, and it would be a difficult matter to meet all needs.

The representatives of the Metropolitan tramway undertakings would be glad to know something about what had been done in connection with the Metropolitan police restrictions, because some of them had felt that the Metropolitan tramway undertakings at this crisis were entitled to a little more help from the police than they had received. It seemed to them that pre-war regulations ought to be relaxed considerably more than they had been, and they had discussed with the Metropolitan police department various questions at considerable length, such as the licensing of cars, the licensing of female conductors, the licensing of female drivers, and the interruption of traffic caused by vehicles obstructing the track which could not at present be moved without special police authority. Subsequently Sir Edward Henry, Chief Commissioner of Police, received a deputation from the Tramways Committee. Without impropriety he might indicate the sort of arrangement which he thought they would succeed in reaching. As regards the licensing of cars, he need not say more than a word, because an official letter from the Metropolitan Police had been sent to the Metropolitan tramway undertakings saying that they would relax their regulations in that respect. The present restrictions as to licences had made it impossible for them to attract young women to serve in the position of conductresses, because they would not subject themselves to the investigation by the police at the head office. It had now been arranged that provided the managers of the tramways would give an undertaking that they would make reasonable investigation no further inquiry would be necessary. In the provinces tramway managers were not so troubled about these matters, and they found that as a war measure excellent results were obtained from women, who observed the rules and regulations laid down. If they made an honest effort to take up the references of applicants, he did not think the police department would make any further difficulty about licensing them. As regards women drivers, while some time ago they had all agreed that it was undesirable to take this question any further, it was now clear that they must reconsider the whole question, and employ women to drive on suitable routes. If the National Service Department thought the employment of women in this way essential, a way must be found by the Ministry of National Service to dispose of questions that might arise with the trade unions. He had been much impressed with what he had seen and learned in Scotland. In Glasgow, with decidedly heavy routes, quite heavy cars and enormous traffic, the women handled the cars with skill and care. At Aberdeen the proportion of women on the tramway undertaking was 92 per cent. of the total employed. The Ministry of National Service would want a very strong reason why women drivers should not be much more largely employed in the south.

Another matter was the question of the interruption of traffic. It was very annoying if a motor omnibus or other vehicle broke down across the track, and nothing could be done for hours because the local police had no authority to order the vehicle to be moved to the side of the road This entailed great waste of public time, and they urged that some arrangement should be made whereby authority could be delegated to the local police station and the matter dealt with summarily, as was done in the great provincial centres. It was quite impossible to imagine that in cities like Birmingham, Cardiff, Leeds, or Glasgow a broken-down vehicle should be allowed to remain on the track for more than a minute or two. It was promptly hauled to the side of the road, and the people who hauled it sent in their bill the next morning to the owner of the vehicle for expenses.

Another matter coming before the committee was the question of the increase of fares. A great number of applications were received from local authorities and companies, and the committee had passed a resolution which they had forwarded to the Board of Trade recommending that the Government should clothe the Board of Trade with statutory authority to deal with this matter, and to extend such authority to permit increases in fares and rates for parcels and merchandise generally, because the rates that could be charged under the Tramways Act of 1870 were wholly uncommercial to-day. Some of them thought that the question of the increase of fares might be met by means of the Defence of the Realm Act, but presumably the Law Officers of the Crown had decided otherwise, and the President of the Board of Trade had decided to introduce special legislation dealing with the increase of the maximum statutory fares, and they would be well advised to send in their resolutions to the Board of Trade at an early date, supporting the hands of the committee at this juncture.

A member of the Tramways Committee was to serve on the recently constituted Road Transport Committee, and there was likely to be between that committee and the Tramways Committee close relationship. No doubt one of the questions would be the distribution of food, but it would not be reasonable to ask tramway authorities to contemplate the conveyance of food over tramways unless they could obtain a fair rate for doing so.

As regarded the local advisory committees which they were setting up in the various areas, their function would be of a technical character and purely advisory. They would be in no way executive and would not move until they were set in motion by the Tramways Committee. They invited them to appoint a committee to consist of an officer from each undertaking, that officer preferably being the general manager, and they asked them also to appoint an honorary secretary. When they came to deal with the question of discontinuing services or closing routes, or even a whole undertaking, in the national interests, on that and on all questions of policy he gave this pledge, that they would hold a local inquiry in the district or town in which the undertaking concerned was situated. On technical points it would be the duty of the local advisory committee before any decision was come to by the Tramways (Board of Trade) Committee to see that a local inquiry should be held, so that all questions of policy would be most carefully considered before any action was taken. He suggested that they should all aim at one thing, namely, the better prosecution of the war, and with the real support of tramway representatives he felt that they could hope successfully to grapple with the many perplexing difficulties they would meet.

Mr. G. H. Hume, chairman of the London County Council Highways Committee, said that it was felt by the Highways Committee that the problems which confronted each tramway undertaking were very difficult to deal with separately. The committee having been established, they intended to help it by all the means in their power. They had confidence in the committee; it consisted of practical men who knew the needs of the undertakings, and they had already settled some points with Government departments which they never could have settled for themselves. The advisory committees would be in constant contact with each of the undertakings. He thought it a wise provision that only officers should be represented on the advisory committees, as they were only to give technical advice. The moment any question of policy or the future interest of any particular undertaking was concerned, the Board of Trade Tramways Committee would come into contact not only with political representatives but with the public. He moved the formation of the suggested committee.

Mr. E. Garcke, as chairman of the Metropolitan Electric Tramways Company, seconded the motion, and expressed appreciation of the action of the Board of Trade in constituting a committee which would undoubtedly help them out of many difficulties, and to the members of the committee for consenting to give their time and attention to the serious problems that would be put before them.

Mr. H. Burt, chairman of the Tramways and Light Railways Committee of the Middlesex County Council, also supported the motion, which was carried unanimously.

On the motion of Mr. W. C. Ullmann, general manager of the East Ham Corporation Tramways, seconded by Mr. F. Schofield, general manager of Leyton Tramways, Mr. T. B. Goodyer, general manager of Croydon Corporation Tramways, was appointed honorary secretary.

Mr. J. B. Hamilton, on the invitation of the chairman, spoke with regard to labour, which had been and was going to be a still greater difficulty. He thought it was exceedingly fortunate for the country and for tramway undertakings that they had now a National Service which was really going to be an efficient department. The supply of casual labour would soon be nearly exhausted, and in many places very few women would be available. He thought the Board of Trade Tramways Committee would give important assistance, as they had been able to arrange relations with the National Service. They were, however, in the position of having to be very careful only to bring forward really necessitous cases. If the cases were sufficiently necessitous, the National Service would give such priority as would enable a certain number of men to be saved for the tramway undertakings, but the tramways would have to free immediately all men who were under military obligations. In many cases they must be prepared to dilute labour, particularly among motormen. Most undertakings were now employing women as conductors and car cleaners, and in many cases as car repairers

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and on other electrical work, and they would have to relieve male labour to the utmost in their power by the substitution of female labour. Personally he had a strong case against employment of women in the capacity of drivers. The duties called for resource and freedom from nerves, conditions which women did not fill physically, but the necessities had to be met. In many towns with suitable routes and gradients, easy curves and car equipment of a kind which could be operated without heavy physical strain, women were already doing the work and doing it very well, and in the nation's stress they must endeavour to give up their prejudices and employ female labour. If they dealt rightly with the National Service Department they would have the whole resources of that department behind the committee in helping tramway undertakings. The undertakings should be prepared as men were offered to them to accept them, whether they were volunteers, war munition volunteers, or army reserve munition workers. Behind the formation of the committees lay the principle of tramway undertakings, doing with as little labour and as little material as possible. They were being urged by the authorities to curtail their services wherever possible to do so in order to release people and material. It would be the essential duty of the advisory committees very shortly to advise them as to essential and non-essential undertakings. A short time ago they issued a circular asking what proportion of the routes were non-essential. The result could not be otherwise than disappointing, because every man thought that his own undertaking was essential. It was not the usual British custom to ask a man to write out his own death warrant or to give up some portion of a system for which he was responsible. That was just the thing that could be done by the advisory committees. They expected a great deal of assistance from the advisory committees on what he might call the principle of their work, that was to secure services that were nationally required and to cut down non-essential and unnecessary services.

On February 27 also a similar meeting was held of representatives from the South-east and South (No. 2 area).

Scottish Area.

The first meeting of the series was that held in the Council Chambers, Glasgow, on February 18, when over 40 representatives of Scottish tramway undertakings attended. The members of the Board of Trade Tramways Committee present included Mr. James Devonshire (chairman), who presided; Mr. A. L. C. Fell, general manager of London County Council Tramways; and Mr. James Dalrymple, general manager of Glasgow Corporation Tramways.

Mr. Devonshire pointed out to the meeting that it was in the national interest that an advisory committee should be appointed to co-operate with the Board of Trade Committee in matters affecting Scotland. He indicated various points that would arise in carrying out the work, including the increase of fares through the abolition of the halfpenny fare, rates for conveyance of parcels and goods, the better utilisation of tramcars in the distribution of food, the labour problem, and the transference of material and equipment. For the advisory committee he suggested the appointment of one member, perhaps the manager, of each tramways undertaking.

A general discussion took place, in the course of which the substitution of women for male drivers was genrally conceded to be satisfactory. Only in one case, that of Paisley, was it stated that women drivers had not been a success.

It was agreed to appoint an advisory committee, consisting of one representative from each tramway concern, and Major Coutts, general manager of Paisley Tramways Company, was appointed honorary secretary.

Mr. Dalrymple, in a concluding statement, said they must always consider that the country must come first at this crisis. Matters would have to be very serious before they took the extreme step of closing an undertaking. At the same time, some of them might have to close particular routes or part of routes, and possibly might have to lift the rails on these routes. In the central parts of Glasgow the track was getting into a very bad condition, and in a short time they would have to lift portions of the non-essential routes in order to keep the essential routes working. That would be the easiest way out of the difficulty, but it might not suit every place to adopt that method.

On the invitation of the Lord Provost of Glasgow and the members of the Tramway Committee of that city, those present were entertained to luncheon in the City Chambers.

Immediately after luncheon, the representatives again met, with Mr. Fell in the chair. The first business done was to decide as to where the committee should meet when called together, and, as both Stirling and Glasgow were proposed, a vote was taken and resulted in the former, it being considered more central than Glasgow. The meeting then decided to group the various undertakings under three divisions, northern, eastern, and western. A general feeling was expressed that if any undertaking had any surplus material whatever, even although obsolete, they might acquaint the secretary of the fact, giving all details, as what might be scrap to one place might be found very useful to another still using an older or different type of equipment. Advice might also be sent to the secretary of any surplus rolling stock that any undertaking could possibly spare, giving details of gauge, wheel-base, total length of car, whether covered deck or open type or single deck, whether swivel trolley, and also if trolley in centre or side of car, and such other information as is necessary to enable the committee to decide as to whether a car could suitably be adapted to run on an undertaking in want of increased rolling stock. The Northern Division will have Mr. Pilcher, of the Aberdeen Corporation, as its honorary secretary; the Eastern Division, Mr. Fitzpayne, of Leith; and the Western Division, Major Coutts, of Paisley.

Northern Area.

The second meeting, which was for the Northern District of England, was held in Newcastle on February 19, when the same members of the National Committee attended, together with representatives of the tramway undertakings in Newcastle and neighbourhood.

Mr. Devonshire, in explaining the objects of the meeting, said that they wanted to regard the whole of the tramway interests as being one large undertaking, and give up all selfish ideas they had held in the past, so as to make one pool, into which all of them could dip. In order to do this, it was desirable to set up a local advisory committee. If the war lasted much longer, the dearth of material, to say nothing of labour, would be very marked indeed, and it was necessary to see that their undertakings were as far as possible maintained. In the South, at many factories, changes in the hours of labour had been made both in the mornings and at nights, and these had been of immense benefit to the tramway services. Another benefit would accrue if ladies who went shopping arranged to do this at times when the cars were not used by the workers.

On the motion of Mr. R. Mayne, chairman of Newcastle Tramways Committee, seconded by Mr. J. S. Hilton, of Gateshead Tramways Company, it was decided to appoint a local advisory committee; and Mr. George A. Carr, Newcastle tramways staff, was appointed honorary secretary.

Mr. Ernest Hatton, general manager of Newcastle Corporation Tramways, in the course of discussion, said for three years they had tried to get the great armament firms of the district to alter the hours of labour, as it would assist the tramway service very materially. They had secured relief from the fact that many women workers did not start in the mornings at the same time as the men. He also intimated that they would be glad to obtain material for maintenance, as a number of their cars were out of service simply because they could not get materials for repairs.

Yorkshire and Lincolnshire Area.

On February 20 representatives of the Board of Trade Committee met representatives from the Yorkshire and Lincolnshire tramways at the Council Chamber, Guildhall, York. Mr. James Devonshire presided, and was supported by Mr. A. R. Fearnley and Mr. R. J. Howley. Mr. Devonshire gave an explanation of the duties and powers of the committee, and his remarks were supplemented by Messrs. Fearnley and Howley. It was unanimously resolved to form an advisory committee for the area, the committee to consist of an officer from each undertaking. Mr. H. England, general manager of the Yorkshire (West Riding) Electric Tramways, was appointed honorary secretary.

Lancashire, Cheshire, and North Wales Area.

Representatives of the committee met delegates from thirty-two tramway authorities in Lancashire, Cheshire, and North Wales at Liverpool on February 21. Mr. Devonshire presided, and was accompanied by Mr. A. R. Fearnley and Mr. J. Dalrymple.

The Chairman said that each of the areas was to be in charge of an advisory committee elected by the undertakings themselves, and to have charge of such questions as labour, rails, permanent way, rolling stock, and car equipment, and priority for material. On the subject of labour, he said he had been astonished in Glasgow to find that 92 per cent. of the tramways employees were women, and that the women drivers in particular performed their work with striking excellence. He hoped all authorities would now conduct all negotiations for Tribunal exemptions through the Board of Trade Committee, which had been given a seat on the Ministry of National Service in order to look after tramway interests. It was essential that their representative should be a good fighter, for he was assured that there was a regular scramble for men on the part of every trade when priority questions came to be considered.

In regard to material, some tramways authorities were "hoarders," and would have to be talked to severely. There was a hope that some rails would be allowed to be rolled, supplies from America having failed them, and they would have to be allotted impartially. No concern not really needing them would be allowed to have them. It would not be possible to purchase new cars.

Councillor Day (Manchester) asked whether in the event of the curtailment of service in one town for the benefit of another town there would be an attempt to adjust the financial loss ensuing.

The Chairman replied that one of the functions of the advisory committee would be to advise as to the amount of compensation payable in respect of loss of revenue involved by reduction of service or closing of routes.

Mr. J. Barnard (Bolton) was appointed honorary secretary.

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Midlands Area.

A meeting of representatives of tramway undertakings in the Midlands District took place in the Birmingham Council House on February 22. The members of the Board of Trade Committee present were Mr. James Devonshire (chairman), Mr. A. R. Fearnley, and Mr. R. J. Howley, and the meeting was attended by representatives of the tramway undertakings in Birmingham, Leicester, Northampton, Nottingham, the Potteries, etc.

After discussion it was decided to form an advisory committee consisting of an officer of each undertaking in the area. Mr. Alfred Baker, general manager of Birmingham Corporation Tramways, was elected chairman, and Mr. R. L. Horsfield, general manager of Walsall Tramways, honorary secretary.

South Wales District.

A meeting was held at the City Hall, Cardiff, on February 25. The members of the Board of Trade present were Mr. James Devonshire, Mr. Stephen Sellon, M.I.C.E., and Mr. J. B. Hamilton. Mr. Devonshire concisely explained the duties of the committee, and it was unanimously agreed to form an advisory committee for the area, the committee to consist of an officer from each undertaking. Mr. Arthur Ellis, Cardiff, was appointed chairman, and Mr. N. J. Young, Newport, honorary secretary.

South-West and South Area.

Representatives of tramways in the South-west and South area met in Bristol on February 26, Mr. Devonshire presiding; Mr. J. B. Hamilton and Mr. A. L. C. Fell were also present. Mr. Samuel White, chairman of the Bristol Tramways and Carriage Company, said that the plan seemed to be an excellent one. It would bring municipal and company undertakings into closer touch, and perhaps create a better feeling. An advisory committee was formed, consisting of the managing director or other officer of each undertaking. Mr. W. G. Verdon Smith, managing director, Bristol, was elected chairman, and Mr. W. E. Hardy, manager, Bath Tramways Company, honorary secretary.

At a meeting for the South of England held at the Board of Trade on February 27, an advisory committee was formed for the South-east and South area, and Mr. W. T. Robson, general manager, Southampton Corporation Tramways, was elected hon. secretary.

THE "SAFETY FIRST" COUNCIL.

A Successful Year.

At Caxton Hall, Westminster, on February 18, the first annual general meeting of the London "Safety First" Council was presided over by Lord Sydenham of Combe, G.C.M.G., G.C.I.E., F.R.S., who was supported by a large and representative gathering including among others Mr. Hayes Fisher, M.P. (President of the Local Government Board), Sir Edward Smith, J.P., Mr. W. Joynson-Hicks, M.P. (chairman of the Council), the Mayors of Hampstead and Lewisham, and Messrs. H. E. Blain, A. P. Johnson, and A. E. Cave (hon. secretaries).

New Light on the Causes of Street Accidents.

Lord Sydenham expressed pride at attending the first annual meeting of the Council, and hoped it would be the precursor of a long series of gatherings, which would in every case mark further progress in a great humane and beneficent movement. The idea of "Safety First" originated in America, where it had been taken up with enthusiasm by railway and transit undertakings, and where it had obtained encouraging success. In London the campaign was launched by the General Omnibus Company, but the "Safety First" Council had developed, and now represented local authorities and organisations throughout Greater London. The annual report showed a remarkable record of progress, and it was astonishing how much work had been accomplished. The latest scheme was for the instruction of children in "Safety First" principles by means of films, lantern slides, and competitive essays, and it was gratifying that 57,000 school children were taking part in the competitions. The Council had spared no effort to interest the public, and especially the drivers, in the principles of the movement. It was now possible to give statistics to prove the value of the work which had been accomplished, for, despite drawbacks caused by darkened streets and the employment as drivers of substitutes who were not always as skilful as was to be desired, there had been a great drop in the number of accidents, due directly to the efforts of propaganda, and he believed the decline would continue. At a time when the best men were giving their lives for their country, it was most important that attention should be given at home to the prevention of loss of life by accident. They needed all the support it was possible to get, because it was desired to extend in a variety of directions, and he hoped that it would yet be possible to secure the support of the London County Council, whose Education Committee had already aided the movement.

The labours of the Council had thrown a new light on the causes of street accidents, and it was knowledge of causes which enabled remedies to be suggested. It had been proved that accidents due to persons stepping into the road were three times as numerous where the people had kept to the right of the pavement as where people had kept to the left. That emphasised the need for altering the rule of the footpath so that people about to step into the roadway would, by keeping to the left, naturally see what road traffic was approaching. It was impossible to alter the driving rule; the difficulties were insuperable. There was no real difficulty in altering the rule of the footpath. No doubt in time there would be unanimity for changing the rule. A large number of authorities had approved of the change, and there was no class which favoured it so much as drivers. There was a wide field open for further activities, especially in connection with the great industries; a sub-committee was exploring that field. They owed a great deal to the officers; the three honorary secretaries had devoted much time and energy to ensure the success of the movement. It was due to the hon. secretaries that the balance sheet contained no claim for administrative expenses.

The Local Government Board's Support—A Word to the London County Council.

Mr. Hayes Fisher, M.P., President of the Local Government Board, said he had watched the progress with the greatest interest. As long as he was President of the Board he would do all he could to encourage local authorities to become associated with the movement. He was not there to make an official pronouncement on the question of left *v.* right or right *v.* left, but would continue to watch experiments, and hoped satisfactory decision might be arrived at. He thought the point needed more experimental observation. He hoped the day would come when the future generation might be able to adopt better methods for dealing with the great congested traffic areas, so as to avoid those accidents which killed and maimed many members of the community. The Local Government Board had assured local authorities that they could pay reasonable subscriptions in order to become members of the London "Safety First" Council, whilst one of his inspectors had frequently attended the meetings of the Council, and had, he hoped, been learning something as well as giving advice. Allusion had been made to the absence of the London County Council. As an old member of that authority, he hoped that it would reconsider its decision and link up with the "Safety First" Council. As owners of the greatest tramway system, the Council ought to recognise that any organisation which was going to help it to avoid street accidents was worthy of support. There never was a time when it was more necessary that people should lend assistance in saving life. Whilst inventive genius was turned into fiendish and devilish processes of extermination, the time was opportune for other inventive geniuses to counter-attack with a view to preserving human life. His department welcomed the movement for saving life arising from street accidents, which to a large extent were avoidable. Statistics of accidents were appalling. Lives were lost because insufficient time had been given to the study of the problem. Every local authority should try to make an analysis of every street accident; he was certain that that would reveal accidents to be due to certain main causes. Having ascertained the causes of accidents, they might find ways of preventing them. Education authorities could do a great deal. He hoped local authorities would concentrate on this question, and not only take individual action but concerted action.

Mr. Joynson-Hicks, M.P., chairman of the Automobile Association, moved the adoption of the first annual report, and said he saw no reason, when the war was over, why the Council should not develop into a national institution, and secure a reduction in the number of street accidents by one-half. It was a great thing that within a year the Council had been the means of bringing so many representatives together with the one great object of increasing the safety of the population. In the past year they had devoted themselves to street accident prevention, but he hoped the Council would now extend and become a great industrial organisation. There was an enormous possibility for good work in factories.

Sir Edward Smith, in seconding the report, said he was glad that the London County Council school organisation had been placed at their disposal for the propagation of safety principles. The safety problem was vast in a metropolis having 7½ millions of inhabitants, over 700 square miles, and a "traffic" of 2,000,000,000 passengers a year. The work would be extended, and be more valued if the local authorities organised propaganda meetings in the town halls.

The report was unanimously adopted. Votes of thanks were accorded to Lord Sydenham and Mr. Hayes Fisher, and the officers were re-elected as follow:—

President—Lord Sydenham of Combe, G.C.M.G., G.C.I.E., F.R.S.
Vice-president—Sir George Gibb, chairman of the Road Board.
Chairman of Council—Mr. W. Joynson-Hicks, M.P.
Vice-chairmen—Sir Edward Smith and the Mayor of Hampstead (Alderman E. A. O'Bryen).
Hon. Treasurer—Mayor of Westminster (Sir E. Welby).
Hon. Secretaries—Messrs. H. E. Blain, A. P. Johnson, and A. E. Cave.

In acknowledging the re-election, Mr. H. E. Blain expressed his belief that by next year the great provincial towns would have adopted the movement.

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GLASGOW TRAMWAYS ACCIDENT.

REPORT TO THE BOARD OF TRADE

By Major J. W. PRINGLE, R.E.

We give below the full text of Major Pringle's report to the Board of Trade with reference to the accident at Glasgow when a car was overturned :—

I have the honour to report for the information of the Board of Trade the result of my inquiry into the circumstances attending the accident which took place, about 6 p.m. on December 5, on the Glasgow Corporation Tramways.

Car No. 157, travelling from Netherlee to Kirklee, was turning into Victoria Road opposite Queen's Park Gate, when it left the rails and overturned. In addition to the driver (motorman James Carnegie) and two women conductors, the car carried 68 passengers. Three of the latter were unfortunately killed, and about 56 were more or less injured (21 requiring hospital treatment) ; both the women conductors also suffered from bruises and shock.

(1) The car, after overturning, slid on its side for a short distance over the stone setts in the roadway. When it came to rest it was lying on its left side at an angle of 45 degrees with the centre line of Victoria Road, half on the pavement and half on the roadway. The top roof was almost detached, only one of the corner supports remaining unbroken ; the front vestibule was smashed in, and the left side scored and damaged. The under frame, wheels, axles, etc., were uninjured.

(2) The car concerned has a single truck (7 ft. wheel base), and is of the double-deck, vestibule, covered type. Its weight unloaded is 13 tons 3 cwts., and its general dimensions are as follow :—

Over-all length	30 ft. 0 in.
Over-all height (excluding trolley pole attachment)	15 ft. 8½ in.
Over-all width above upper deck	7 ft. 2 in.

The wheel gauge is 4 ft. 7¾ in.

The car is equipped with two Westinghouse No. 49B motors of 30 H.P. each, with B.T.H. controllers having four series and four parallel power notches. It is fitted with the latest pattern Newall magnetic brake, which comprises a track brake, in the shape of a metal shoe on each rail, and blocks on each wheel. There are six magnetic braking points. In connection with this brake there are four automatic sanders, one at each corner of the car. In addition, there are secondary brake blocks on each wheel, which are applied mechanically in the usual way, by spindle and hand crank, from the driver's platform.

Car No. 157 was first put into service in September, 1913. Its last yearly overhaul was in May, 1916, and the wheels of the car were turned up in August, 1917 The total mileage since May, 1916, has been 52,729. The car wheels were gauged and found to be standard on December 3, 1917. They had an original diameter of 31¾ in. The present diameters vary from 29⅛ in. to 30⅛ in. The flanges show a loss in depth of about one-tenth of an inch, and in width of about one-fifth of an inch.

The controllers were cleaned and examined on December 3, and the brake gear adjusted on December 4. The car shed return shows that no complaints with regard to brake equipment have been received during the past year. The last entry in the defect return is dated November 26, 1917, when the car was withdrawn from service on account of a broken pilot board and lifeguard.

(3) The track in the vicinity is double. The approach to the scene of the accident, along Langside Road and Queens' Drive—a distance of about 460 yards—is on a flat, left-handed curve with a radius of 850 ft. A length of 40 ft. of tangent intervenes between the termination of this easy curve and the right-hand curve into Victoria Road. This latter curve has a total length of 120 ft., of which 35 ft. length at each end is spiralised, and the radius of the inner rail of the outer track over the centre portion of the curve is 57 ft. 7½ in. The outer rail in the vicinity of the point of derailment is super-elevated to the extent of ·6 in. to ·7 in.

The gradients over this section fall continuously at inclinations of from 1 in 60 to 1 in 70 over the first 350 yards, and then flatten out to from 1 in 100 to 1 in 190 over the remainder of the route.

The permanent way along the flat curve and tangent was laid in August, 1907, with B.S. rails weighing 110 lb. per yard, laid on cross sleepers at 3 ft. 6 in. intervals, resting on concrete. The curve leading into Victoria Road was relaid in April, 1912, with rails weighing 116 lb., with similar foundation. The curved rails were bent mechanically in the shops to the required template. The roadway is paved with 6 in. granite setts, 3½ in. wide, grouted with coal-tar pitch.

Full scale sections of the rails on the curve have been prepared, and show that the width of the grooves at the point of derailment has increased from wear from 1½ in. to from 1⅝ in. to 1⅝ in.

(4) The maximum speed authorised by the Board of Trade along Langside Road and Queen's Drive is 16 miles per hour. On the curve between Queen's Drive and Victoria Road the speed limit is four miles per hour. There are no Board of Trade compulsory stopping-places on this section. All cars, in accordance with the Corporation's rules, have to be stopped at the junction of Langside Road with Grange Road, also in Victoria Road after passing over the sharp curve from Queen's Drive.

(5) Motorman Carnegie entered the service of the tramways department on September 4, 1917, at the age of sixteen years two months. After leaving school, at the age of 14, he served as a clerk for a year, and subsequently served a further year in electrical works. He was employed until October 11 as conductor, when he began a course of instruction in tramcar driving. The course comprised four days' tuition in the Corporation Motor School, and eight days' outdoor training on a passenger car under an experienced motorman. On October 26 he passed his final individual examination, and subsequently drove cars on service as a probationary driver for a month's time. On December 1 he completed his probation, and became a fully qualified motorman.

On December 5 he came on duty at 6.55 a.m., was off duty from 10.30 until 1 p.m., and would normally have completed his day's work about 7 p.m. At 1 p.m. he took over charge (for the first time) of car No. 157 at Kirklee, and was on his way home on his third trip when the accident occurred. He had driven over this (Kirklee and Netherlee) route on seven previous dates, including three or four occasions after dark. Carnegie explained that on the last outward journey he did not proceed to the fixed terminus at Netherlee. He was six minutes late and therefore turned the car at Cathcart, a stage short of the terminus. He left Cathcart at 5.50 p.m., two minutes before time. At the first stopping-place the car became so crowded with passengers, both inside and out, that he was obliged to turn a number of standing passengers off the top deck and platforms. He left the stopping-place with about half-a-dozen passengers standing inside the lower deck. He stopped the car at the halfpenny stage at the junction of Langside Road and Grange Road at 6 p.m., one minute before time. On re-starting, he fed the car to full power, and came along Langside Road and Queen's Drive at full speed. He then threw off power, and allowed the car to coast for some distance. He knew he was getting close to the curve in Victoria Road ; but, owing to the darkness, he could not tell exactly where the curve began. He had hold of the hand brake, keeping it slightly applied. Ten yards from the curve, where his estimated speed was eight miles an hour, the light of the electric lamp at the corner of Victoria Road illuminated the rails on the curve, and he applied his hand brake fully. This did not check the speed ; he therefore released the hand brake and applied the magnetic brake, first to the extent of three notches, and then, finding this had no effect, with full force. He was on the point of applying the reverse when the car struck the curve so violently that he was thrown backwards against the stairs. As he regained his balance he noticed that the inner side of the car lifted. The outer wheels then left the rails, and the car overturned.

Carnegie agreed that the accident was caused by high speed, and thinks that he was taken by surprise by finding himself nearer to the curve than he had expected. It is possible that he applied the hand brake too powerfully, with the result that the wheels locked and skidded on the greasy rails.

The evidence of Messrs. Kennedy and Henderson (top deck passengers) and Mr. Macalister, a pedestrian, is to the effect that the speed of the car along Langside Road was not higher than usual. The first-named was descending the stairs, not realising there was any danger, when the trolley-pole came off the overhead wire, and the lights of the car went out. A more violent jolt than usual was immediately followed by the overturning of the car.

Motor Inspector McCaskill arrived at the scene of the accident at 6.10 p.m. He found the dog of the hand brake in position, and the brake blocks hard on. The power handle was at the second notch of the magnetic brake, the reversing lever in the forward position.

Mr. David Brown, rolling stock superintendent, arrived at the scene of the accident about 6.45 p.m. His opinion, based on the position of the car, is that overturning took place on the roadway, and was not the result of the left-hand wheels of the car coming into contact with the kerb. He examined both brakes, and found them in good order. It is not the practice to apply both the mechanical and magnetic brakes at the same time. The latter brake is inoperative unless the wheels are revolving.

After the accident the car was pulled up on to its wheels, and drawn on the rails into the depot. The wheels were tested and found to gauge, with the flanges uninjured. After a new trolley standard had been fitted on to the roof of the car, as I found by personal inspection, it was possible both to drive and control the car without any alteration to the controller or brake equipment.

Mr. James Grierson, permanent way engineer, gave evidence that the only wheelmark found was on the roadway, outside the outer rail of the curve. It commenced about 57½ feet from the tangent point and extended for 6 or 8 ft , but not continuously. Other not well-defined marks of scraping were subsequently found, evidently not caused by wheel flanges. There were no marks on the setts, or rail-guard, of any inside wheels.

(6) On a curve of 60 ft. radius, assuming the centre of gravity of the loaded car to have been 6 ft. above ground level, overturning, due to the effect of centrifugal force, will theoretically take place

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at a speed of about 19 miles an hour. The safe limit of speed, beyond which danger of derailment or overturning may be anticipated, is five to six miles an hour. With worn rails a speed of more than four miles an hour is inadvisable. The general evidence on the point of speed does not warrant the conclusion that the car was travelling at 19 miles an hour when the accident took place. But curve resistance rapidly increases as rails and flanges become worn, making "slippage" more difficult. In this case also the wheels appear to have been locked by an over-powerful application of the hand-brake. There would arise a tendency of the front wheels to bind—particularly on a track with a guard to the inner rail, and of the rear wheels to lift—in the case especially of a tramcar with long overhanging platforms in front and rear of a single truck. That such a lift took place is, I think, clearly proved by the fact that only one left-hand wheelmark could be found outside the rail. The violent jolt resulting from the momentary check so caused would allow of time for the centre of gravity of the car to swing outwards, owing to the load of passengers shifting in that direction. In combination with the action of centrifugal force at the same moment, overturning would result at a lower speed than theoretically required.

(7) There are now two further points for consideration :—(*a*) The sufficiency of the lighting in Queen's Drive, (*b*) the suitability of lads between the ages of 16 and 18 as tramcar drivers.

(*a*) The Corporation have furnished a plan showing the positions of the lighted and unlighted street lamps in the neighbourhood of the site of this accident. In Queen's Drive two gas lamps are kept lighted, 220 yards apart. One indicating a "stop if required" point, is on the north side of the roadway, 150 yards from the curve. The second is on the south side, about 70 yards beyond the curve. A third (electric) lamp is lighted on the east side of Victoria Road, opposite the centre of the curve. The overturned car lay on the west side of Victoria Road, nearly opposite this electric lamp. Along the same stretch of roadway there are nine unlighted gas lamps.

Motorman Carnegie stated that the lighting was insufficient, that the whole of Queen's Drive was dark, and that the light at the corner of Victoria Road could not be seen until the car was practically on the curve. I think his complaint is justifiable, and that darkness was a factor of importance in this case.

As regards general illumination, there is no lighting on the south side of Queen's Drive along the side of the Park for a length of 250 yards of tramway track preceding the curve. If similar lighting restrictions obtain over the whole of this tramway system, I am not surprised to hear from the traffic superintendent that darkness of the roads is a distinct deterrent to women offering themselves for training as motor drivers, and accounts in part for the Corporation losing the services of many capable women already trained as drivers.

Moreover, sharp curves, where speed or stop regulations have been imposed in the interests of safety, require to be clearly defined in both directions by special lighting during the hours of darkness. War has brought in its train unavoidable handicaps to safety conditions in several directions. But I cannot agree that a policy of over-darkened streets, and reduction in tramcar lighting, dictated mainly by nervousness in connection with possible air raids, is unavoidable. Public safety will be best served by a greater degree of diffused light in the streets than has so far been permitted in many districts.

(*b*) Men over 21 years of age were alone employed on the Glasgow tramways as motormen in pre-war times. The normal number required to carry on the service is 1,700. The staff now consists of a total of 1,558, comprising :—

46	lads	between the ages of	16	and	21
578	men	,, ,,	21	,,	41
511	,,	,, ,,	41	,,	51
157	,,	over the age of	51		
1,292					
10	women	between the ages of	19	and	21
241	,,	,, ,,	21	,,	31
15	,,	,, ,,	31	,,	41
266					

The position with regard to the staff of motormen (compared with 1914) is that the Corporation have replaced 302 motormen over 21 years old by 266 women and 46 lads, and have been unable to fill up vacancies to the number of 106.

Mr. Lachlan McKinnon, traffic superintendent, gave evidence that about three months ago the experiment of training and employing boys as motormen was started. One of the reasons which led to this decision was the failure of an arrangement made with the military authorities in June last, whereby, under a scheme of substitution, the Corporation were entitled to have returned to them about 100 of their emoloyees, men of low medical category, and enlisted for home service, many of whom were capable motormen. Another reason was the number of resignations of trained women drivers, who found themselves incapable of standing the strain of responsibility, and the physical effort involved. Out of a total of 800 women who have been trained as tramcar drivers the Corporation have succeeded in retaining 266. I have referred to the special difficulty during the winter months of the darkness in the streets, which prevents women from offering themselves for training. Since the abolition of the leaving certificate the Corporation have moreover lost 111 trained drivers—64 men and 47 women—who have left their service to obtain higher wages. They now have employed 146 lads under the age of 18, of whom 39 are qualified motormen, 51 are being trained as such, and 56 are doing conductors' work.

Mr. McKinnon pointed out that discipline is not so good as before the war, owing partly to the ease with which other employment is obtainable, and partly because the staff for inspection and supervision has been unavoidably reduced by more than a half. He thought that the necessity for discipline is as well understood by lads as it is by men, and better understood than by women. In his view the three essentials for a motorman are physique, intelligence, and temperament. The second quality is the easiest, while the last is the most difficult to find in a boy. Very careful selection is therefore necessary in the case of lads. So far these boy drivers have not proved reckless or over-confident. In Carnegie's case, Mr. McKinnon thought he was a solid, sensible lad, unlikely to lack caution.

In my opinion, boys at the age of 16 will not be found to have reached their full growth, either physically or mentally. In the growing stage they will tire more rapidly, with the result that their power of concentration will flag. They are less fully developed in comparison with girls of 19. The reduction in the age of men, employed in the very responsible position of tramcar driver, from 21 to 16, entails too great a sacrifice of necessary qualities for the policy to prove acceptable, with due regard to public safety. Further, even when lads of the necessary physique, intelligence, and temperament have been trained, and have proved capable drivers, the majority become eligible at the age of 18 for military service, and are consequently enlisted. From this point of view therefore the policy is of questionable value.

(8) My conclusions on this case are as follows :—

(*a*) That the accident was caused by too high speed on a sharp curve, and that the misapplication of the mechanical brake was a factor.

(*b*) That there is direct evidence to show that Carnegie was not driving at a reckless speed whilst approaching the curve, and I therefore consider that his failure to reduce speed within safe limits before entering the curve was due to the lighting in Queen's Drive being insufficient to enable him to gauge its real position, and possibly also to some want of concentration on his own part.

(9) I make the following recommendations :—

(*a*) That all cars should be brought to a standstill in Queen's Drive and Victoria Road before entering the sharp curve connecting these thoroughfares ;

(*b*) That Queen's Drive be better illuminated by night, and that in particular a street lamp be kept lighted on the south side, opposite the tangent of the curve, as a special indication of the stopping-place. These compulsory stopping-places, imposed by safety requirements, are commonly marked by day by distinctive colouring of a standard. By night the necessity for marking is even greater. The use of a coloured lamp would seem to be appropriate.

(*c*) That lads shall not be appointed as drivers under the age of 18. Those now so employed should be kept on probation for at least three months ; their hours of duty should be shortened, and more frequent holidays granted, until they attain the age of 18.

(10) It is certainly desirable, since substitution by arrangement appears to have proved no success, that women should receive all possible encouragement to undertake the duties of driver, and thus relieve men for military service. Perhaps something can be done to reduce the strain and physical effort involved in tramcar driving —by shortening the hours of duty, by giving longer intervals of rest, by minimising the effects of exposure to weather, by better illumination of the streets and thereby to induce them to undertake the responsibilities in larger numbers.

MIDLAND MUNICIPAL TRAMWAYS ASSOCIATION.

With the object of forming a Municipal Association of Midland Tramways, a meeting was held in Birmingham on February 11 under the presidency of Alderman S. Flint, chairman of the Leicester Tramways Committee and president of the Municipal Tramways Association, of representatives of the various municipal tramway undertakings in the Midland area, including Birmingham, Walsall, Coventry, Wolverhampton, Northampton, Nottingham, Derby, Lincoln, and Gloucester Corporation Tramways.

The association was duly formed, and Mr. Harrison Barrow, chairman of the Birmingham Corporation Tramways Committee, was elected chairman for the ensuing year, Alderman Flint deputy chairman, and Mr. R. L. Horsfield, general manager of Walsall Corporation Tramways, was appointed secretary. It was decided to hold quarterly meetings, with special meetings as may be required, The Midland Association is to include representatives of tramway committees as well as the general managers of the undertakings.

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FINANCIAL REPORTS AND MEETINGS.

Hong Kong Tramway Company.—A final dividend of 14 per cent., making 23 per cent. for the year, has been declared; £42,267 is carried forward.

Newcastle-on-Tyne Electric Supply Company have declared a final dividend of 5½ per cent. on ordinary shares, making 8 per cent. for the past year.

Guest, Keen and Nettlefolds.—The directors announce an interim dividend for the six months ended December 31, 1917, at the rate of 5 per cent. per annum on the preference shares, and 1s. per share on ordinary shares.

Clontarf and Hill of Howth Tramways Company.—A dividend at the rate of 3 per cent. per annum, and 1s. per share bonus, less income-tax, was declared at the ordinary meeting, at which Mr. E. Anderson presided.

Mather and Platt, Limited.—The directors recommend a final dividend of 12½ per cent. on ordinary shares, making 17½ per cent. for the past year. In 1916 the total distribution was also 17½ per cent.; those for 1915 and 1914 being 12½ per cent., and for 1913, 15 per cent.

Loss on Stalybridge Tramways.—The Stalybridge, Hyde, Mossley and Dukinfield Tramways and Electricity Board have decided that a sum of £5,000 will be necessary to meet the deficit on the tramways, and this amount will be levied in sums of £1,250 from each of the four Corporations concerned.

British Insulated Cables—Bonus Share Issue.—Subject to the sanction of the Treasury being obtained, the directors recommend that the capital should be increased to such an extent as to enable the issue to be made of one fully-paid ordinary share for each ordinary share held by them.

City and South London Railway.—The directors recommend a dividend on the consolidated ordinary stock for six months ended December 31, 1917, of ¾ per cent., making for the year 1½ per cent., carrying £21,265 forward. A year ago the dividend was the same, with £17,245 carried forward.

Yorkshire Electrical Distribution Company.—The net profits for 1917 were £3,693. A dividend of 6 per cent. is recommended on the ordinary shares, £1,000 to be added to reserve, and £697 carried forward, subject to directors' fees. In order to provide for developments it is proposed to increase the capital from £50,000 to £100,000.

City of Buenos Ayres Tramways Company.—The report for the year ended December 31 last shows a net revenue of £67,670, of which £46,500 is absorbed by the interim dividend to September 30, leaving £21,170. A final dividend of 1s. 3d. per share is recommended, making 5s., or 5 per cent. in all, less tax, for the year; £5,600 is transferred to the general amortisation fund for the redemption of the share capital, which fund now stands at £62,446, and £70 is carried forward.

Bruce Peebles and Company, Limited.—The directors' report for the year ended December 31, 1917, shows that the trading profit amounted to £23,616. Afrer deducting administration expenses, interest on debentures, and depreciation, there remains a net profit of £14,584, which is subject to excess profits duty for the years 1916 and 1917, the amounts of which have not yet been adjusted. Having regard to the abnormal times, the directors regard the results as satisfactory.

Leeds Forge Company.—After making provision for contingencies, the profits permit of the payment of the usual dividend on the preference shares of 7 per cent., and a dividend on the ordinary shares of 10 per cent. for the year, free of tax. The directors state that no settlement of the pre-war standard of profits has been reached, and consequently the position regarding excess profits duty and special taxation is still undefined. They are consequently unable to present the usual report for the year.

Fife Tramway, Light and Power Company.—The net profit for the year amounts to £31,278; of this sum £10,000 is transferred to reserve account, and £8,390 carried forward, dividend on the ordinary shares being at the rate of 5 per cent. per annum, less tax. It is announced that a new issue of debenture stock will be necessary in the near future to meet the balance of the cost of the new tramway from Dunfermline to Rosyth, undertaken in September last at the request of the Admiralty, and to provide for the further plant required by the growth of the company's undertaking.

A New Power Company.—The Tees Power Station Company was registered on February 13, with a capital of £700,000, in £1 shares, to acquire from the Newcastle-upon-Tyne Electrical Supply Company a piece of freehold land at Billingham, Durham; to erect thereon a generating station for electrical energy, and any similar stations elsewhere; to enter into an agreement with the Newcastle company or any of its associated companies for operating the stations, and to carry on the business of electricians, mechanical engineers, etc. The first directors are Messrs. J. H. Armstrong and R. P. Sloan.

Liverpool Tramways.—The Tramways and Electricity Committee report another good year. The tramway undertaking shows a surplus of £167,243 for the year ended December 31, 1917. The committee propose to transfer £42,243 to reserve, renewals and depreciations account, and £125,000 to the general rate. The electric supply account has a surplus of £100,298, of which £35,298 goes to the renewals account and £65,000 to the general rate. The committee recommend that in consequence of increased costs the charge for electrical energy be increased from the end of the current quarter by 17½ per cent., except to the tramways.

Dublin United Tramways Company.—The report for the year ended December 31, 1917, shows generally an all-round increase of receipts the latest total of £369,936 comparing with £335,335 for 1916. Against this there is a considerable increase in working expenses i.e., £251,951 for 1917 as against £220,861 in the previous year. The balance available for distribution is £96,236, and the dividends are on the same basis as for 1916; the amount carried to reserve, viz., £7,000, is also identical. For renewal of permanent way, however, the allocation is £15,000, or £5,000 less than before, but £11,500 has been written off investments, bringing them approximately to present market value.

Underground Electric Railways.—The Board state that, subject to confirmation of the dividend announcements by the companies in which this company is interested, and subject to final audit, the revenue of the company will enable it to pay the full interest to December 31 last on its 6 per cent. first cumulative income debenture stock, and to pay 2 per cent., free of income-tax, on its 6 per cent. income bonds of 1948 for the half-year ended December 31, making 4 per cent., free of tax, for the year, with a carry forward of about £31,000. A year ago the payment on the 6 per cent. first income debentures was at the same rate, but that on the 1948 income bonds was 5 per cent. for the year, £30,000 being carried forward.

Sunderland's Tramway Estimates.—The estimates for the year ending March 31 next of the Corporation tramways show an income of £94,820 as compared with £85,513 1s. 3d. actual income for 1916-17. The working expenses are placed at £57,430, as against £49,970, which leaves a balance to be carried to net revenue account of £37,390, comparing with £35,543 last year. An increase of over £4,700 in traffic expenses is chiefly due to wages advances. General repairs and maintenance amount to £8,650, or £1,300 more than last year, this being due to increased cost of material and wages. Payments for the net revenue account include, in addition to £5,000 for the relief of the rates, £6,041 to the reserve and renewals fund, and a new item, viz., £1,500 as depreciation of investments. Loans have been repaid to the extent of £13,618, and interest on loans amounts to £6,896.

Edinburgh and District Tramways Company.—In moving the adoption of the report at the annual meeting, the chairman (Mr. A. H. Laidlay) said the year was in many respects the most trying within the company's experience. Until well on in the year the position had been a most serious one, as the undertaking was being carried on at a loss. They paid the Corporation, as rent, £113,000 per annum, including rates and taxes, whilst the return to the shareholders since the inception of the company had been little more than £6,900 per annum. Regarding their difficulties with the Corporation, they had now entered into an agreement which they thought was the fairest that could have been arranged. It was to be regretted it was impossible to pay a dividend this year, but the directors considered that, in view of the expiry of the lease in eighteen months time, they were acting in the interests of the shareholders in making provision for the unknown possibilities of the future. The increase of fares had produced satisfactory results, and the passengers showed a steady increase, the total for the year having been 70,687,146, equivalent to about 220 journeys per head of the population.

South Shields Tramways.—Mr. J. C. Whiteley, in his report for the year ended March 31, 1917, states that the results are again very satisfactory. The undertaking has been seriously handicapped by shortage of staff. Owing to the difficulty of getting drivers not eligible for the army, an adequate service of cars could not be run, and there was some overcrowding and inconvenience. The omnibus services had to be curtailed owing to trouble with the batteries, while the financial result is not so good as that for the cars. The omnibus services, however, were a convenience, and act as feeders. Extensive overhauling and renewals will be necessary when circumstances permit. Only minor repairs and renewals to the permanent way have been carried out, but the wise policy has been adopted of setting aside a permanent way renewals fund, which will relieve to some extent the heavy charges after the war. Mr. Whiteley recommends in addition the provision of a fund for the repair and renewal of the overhead equipment, rolling stock, etc. The manager records his appreciation of the splendid way the whole of the employees have carried out their duties. The revenue amounted to £44,038, an increase of £2,611, but there was an increase in expenditure of £1,792. The balance carried to net revenue account was £13,288.

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Lancashire United Tramways.—The result of the working for the year ended December 31 last show traffic receipts £124,825, and other receipts £16,389, making £141,214 in all. After deducting working expenses, £70,095, cost of generating energy sold, general charges and rent of leased lines, there is a balance of £49,473, to which has to be added dividend on holding in the New St. Helens and District Tramways Company, £3,068, making a total profit of £52,541. Compared with 1916, receipts show an increase of £32,942, and expenditure £13,506, the latter being principally due to increases in wages and to the high price of materials. Fares were raised to meet these increased charges, the average traffic earnings for a mile for the year being 14·73d. Interest and dividends received from the operating companies amounted to £21,985. After deducting interest on the prior lien debenture stock, income-tax, and expenses, there remains a balance out of which the full interest of 5 per cent., less tax, will be paid on the second mortgage debenture stock for 1917, £68 being carried to depreciation account. There is also a balance on the year's working of the operating companies, after payment of the interest and dividends, of £25,148. The depreciation and renewal accounts and amounts carried forward in the combined companies now amount to £77,101.

Blackpool and Fleetwood Tramroad Company.—The report for the year ended December 31, 1917, shows net earnings, after payment of debenture interest and fixed charges, of £18,409, making, with the balance of £3,749 brought forward, a sum of £22,158. Deducting the interim dividend for the six months ended June 30 at 4 per cent., which required £3,000, there is a balance of £19,158. This sum the directors recommend should be allocated as follows:—Payment of a final dividend at the rate of 4½ per cent. (making 6½ per cent. for the year), £6,750; to general reserve account, £2,000; to depreciation account, £4,869; writing down value of investments in railway stock, £1,500; carrying forward £4,039. The appended summary gives a comparison of the results of the past four years—

Year ended December 31	1917.	1916.	1915.	1914.
Revenue—	£	£	£	£
Traffic receipts	44,039	42,920	38,906	39,138
Other receipts	2,769	2,364	1,841	1,363
Total	46,808	45,284	40,747	40,501
Expenditure	25,844	24,471	19,849	21,330
Net income	20,964	20,813	20,898	19,171
Balance brought forward	3,750	4,250	2,977	3,451
Appropriation from reserve	217	215	5	399
	24,931	25,278	23,880	23,021
Interest, and other fixed charges	2,773	2,773	2,772	2,794
Balance	22,158	22,505	21,108	20,227
Dividend on ordinary stocks (6½ per cent.) ...	9,750	9,750	9,750	9,750
General reserve account	2,000	1,000	5,499	2,500
Depreciation reserve account	4,869	5,000	615	5,000
Value of investments	1,500	3,005	994	—
Carried forward	4,039	3,750	4,250	2,977
Ratio of expenses to receipts	58·69	57·00	51·02	54·50

Walthamstow Council Tramways.—The manager, Mr. William Murray, in his report for the year ended March 31 last, alludes to the change in fares and fare stages which came into operation on April 3, 1916, and involved the abolition of the halfpenny stages. The Council have always endeavoured to give the cheapest travelling facilities possible, and at the same time have striven by economy to make the department self-supporting. They had succeeded in this effort in the years 1910, 1911, and 1912, when the advent of the motor omnibus gave a set-back, and rendered necessary some change if the department was to pay its way. Finally they decided to abolish halfpenny fares for adult passengers, to discontinue cheap return tickets, and to increase the price of workmen's tickets by 50 per cent. The changes have been amply justified. The traffic revenue for the past year increased by £9,518, and the net balance was £7,254, as compared with £816 for the previous twelve months. Mr. Murray remarks that Walthamstow gave a lead to other tramway authorities, and now their near neighbours, including Leyton, West Ham, East Ham, and the London County Council have followed their example. The receipts for the past year amounted to £55,775, an increase of £9,896, while the average total revenue per car-mile was 11·85d., an increase of 1·44d. The working expenses, including power costs, was 7.82d. The number of passengers was 12,367,778, a decrease of 2,320,685. Power consumption averaged 1·34 units per car-mile, as compared with 1·36 units during the previous twelve months. The charge for electricity was 1·415d. per unit, as compared with 1·394d. per unit last year. The average of working expenses to receipts was 66·02. The payments to dependents of men serving with the colours amounted to £1,794, and £800 was paid in war bonuses to members of the staff. Up to March 31, 1917, seventy-six of the staff had enlisted, and forty-two had taken up munition work. Six have been discharged from the army because of wounds, and have resumed their service in the department. The staff at the close of the year numbered 210. Mr. Murray says it is a source of much gratification that in the midst of a great deal of unrest in the labour world the staff had displayed the utmost loyalty to the department, and had worked most strenuously. The monetary concessions so readily granted by the Council showed that the attitude of the men was much appreciated.

CONTRACTS AND ORDERS.

Babcock and Wilcox have an order from Barnsley Corporation for a water tube boiler at £3,900.

The General Vehicle Company, Limited, are supplying two electric coal wagons to Derby Town Council at £2,810.

Babcock and Wilcox, Limited, have a contract with Derby Council for a boiler for the electricity works, at £4,595.

John Brown and Company, Limited, have an order from Bradford Tramways Committee for steel tires, the amount being £2,000.

Electromobile (Leeds), Limited, have received orders from Oldham and Bootle Corporations for a 2-ton and a 3½-ton chassis for electric tipping wagons.

Swansea Electricity Committee have recommended the acceptance of the tender of James Howden and Company, Limited, for a turbo-alternator, at £15,387.

West Ham Council has approved an arrangement with Messrs. Brunner, Mond and Company for five years' contract for alkali for the water-softener at the generating station.

Glasgow Electricity Committee have recommended the acceptance of a tender by Dick, Kerr and Company, Limited, for turbines, condensing plant, alternator, and transformer at £98,400.

Bradford Tramways Committee has placed an order for the supply of brake shoes with the National Rail and Tramway Appliances Company, Limited, and with Cole, Marchent and Morley, Limited.

The Murphy Submarine Pipe Line and Flexible Tube Company, Limited, have sold to the London County Council two gas storage cylinders at £15 each, less 20 per cent., for use in connection with motor lorries of the tramways department. Gas is being substituted for petrol for working the lorries.

Manchester Electricity Committee has accepted tenders as follows:—C. Bradshaw and Company, Limited, two fan draught cooling towers; British Thomson-Houston Company, Limited, three 1,050 KW. converters, and extra high-tension switchgear; C. Macintosh and Company, Limited, W. T. Glover and Company, Limited, British Insulated and Helsby Cables, Limited, cable; Bruce, Peebles and Company, Limited, one 2,000, 2,500, and two 500 KW. motor converters.

Contracts at Greenwich Power Station.—Arrangements have been made for the following work at the Greenwich station of the London County Council Tramways:—E. Bennis and Company, Limited, 1,450 chain grate links (£65 8s. 2d.); Babcock and Wilcox, Limited, 8,000 common links and 3,600 driving links for the boilers (£417 2s.); Stirling Boiler Company, Limited, 98 super-heater tubes for the boilers (£85 15s.); J. Keith and Blackman Company, Limited, two cast-iron fan cases for the ash dust removal plant (£27 10s.).

Fittings for L.C.C. Tramways.—The undermentioned tenders have been accepted by London County Council:—Cotton-covered copper wire—London Electric Wire Company and Smiths, Limited (£925); Midland Electric Wire Company (£5,740). Iron castings—John Crowley and Company, Limited, (£250). Re-winding armatures for tramcars—P. R. Jackson and Company (£476 5s.); Drewer, Stevenson and Company (£224 5s.); British Westinghouse Electric and Manufacturing Company, Limited (£167 10s.); H. Dunn and Son (£340); Armature Repair Company (£18 5s.); Electrical Repair Company (£360); Burdette and Company (£315); Collins Electrical Company, Limited (£160). Supply of field coils for tramcar motors: Tenders were received from the undermentioned firms for the supply of 500 of each of two types (classes 200 and 220), and 200 of each of two types (classes 3A and 25A) of field coils for tramcar motors—Manchester Armature Repair Company; Brush Electrical Engineering Company, Limited; British Westinghouse Electric and Manufacturing Company, Limited; the Armature Repairing and Supply Company, Limited; Johnson and Phillips, Limited; and the Electrical Repair Company. The Highways Committee accepted the offers of the Manchester Armature Repair Company for the supply of all the types of coils, except those of class 200, the offer of this firm being accepted for 200 coils of this type, the remainder (300) being obtained from the Brush Electrical Engineering Company, Limited. The total expenditure involved will amount to about £8,980. Truck sides for tramcars:—Eight truck sides for tramcars of the type principally used on the Council's tramways—Hurst, Nelson and Company, Limited, Motherwell, at £14 each. Driving wheel centres—Hadfields, Limited, supply of 100 driving wheel centres (iron castings) at £4 17s. 6d. each.

Bath Corporation's Thanks to Tramways Company.—The City Council have passed a resolution expressing appreciation of the public-spirited action of the Tramways Company in carrying wounded soldiers free of charge for a period of over three years, thus assisting in making the stay of the men in Bath as pleasant as possible.

Petrol Electric Cars in New Zealand.—In the annual report of the New Zealand Government Railways for the year ended June 30, 1917, Mr. H. H. Jackson, the chief mechanical engineer, reports that the Thomas transmission rail motor car was erected during the year, and employed on suburban services. The Westinghouse petrol-electric rail motor car was also employed on suburban traffic.

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PERSONAL.

Mr. R. B. Leach, borough electrical engineer of Loughborough, has been granted an increase of £50 in salary.

Mr. E. Carden, manager of Dover Corporation Tramways for the past twenty years, has resigned his appointment.

Mr. L. Woodman, electrical engineer of the Dover Electricity Committee, has resigned to accept another position.

Mr. J. A. Crowther, electrical engineer, Wallasey, has been granted an increase in salary of £100 per annum as from March, 1918.

Mr. J. B. Meek, acting city engineer, Manchester Corporation, has been appointed city engineer at a salary of £1,000 per annum.

Mr. T. C. Winfield, of West Ham Corporation Tramways, has been appointed works superintendent of Birmingham Corporation Tramways.

Corporal W. E. West, formerly in the employ of the Bristol Tramways Company, has been awarded the Military Medal for conspicuous bravery in the field.

Corporal V. Vidler, R.E., formerly on the staff of the Hastings Tramway Company, has been awarded the Military Medal for gallant work in Italy.

Mr. F. H. Corson, engineer and general manager of Gloucester Corporation light railways, has been granted an increase in salary from £500 to £600 per annum.

Mr. F. W. Purse, electrical engineer, Carlisle, has received an increase of salary from £500 to £600, with two further annual increments of £50 on April 1 in each year.

Mr. P. J. Baker, electrical engineer, Plymouth Corporation, has been recommended by the Tramways Committee to receive an increase in salary of £50 per annum.

Mr. A. P. Trotter has accepted the presidency of the Illuminating Engineers' Society. Mr. Trotter is a partner in the firm of Handcock, Dykes and Trotter, consulting engineers.

Alderman C. F. Spencer, chairman of the Halifax Tramways Committee, commenced his duties on January 28 as director of the Central Kitchens Division of the Ministry of Food.

Mr. R. L. Acland, borough electrical engineer and tramways manager, Chesterfield Corporation, and various other officials, have been granted a bonus of 7½ per cent. on their salaries.

Mr. G. W. Holford, general manager of Salford Corporation Tramways, has been granted an immediate increase of £50 in salary to £700, with a further advance of £50 in another two years.

Mr. T. Evans, of Walthamstow, has been appointed traffic superintendent of Walthamstow Council Light Railways at a salary of £150 per annum without war bonus, rising to £200 per annum.

Mr. E. Cloney, district traffic superintendent in the tramways department of the London County Council, has been promoted to the position of divisional superintendent in the traffic branch of the tramways department at a commencing salary of £325, rising to £400.

New Chairman of Belfast Tramways Committee.—For the twelve months ensuing from March 31 next, Councillor J. C. White and Councillor J. A. Duff have been elected respectively chairman and vice-chairman of the Belfast Corporation Tramways and Electricity Committee.

Bombardier A. Hirst, R.F.A., formerly an electrician in Blackpool Corporation Tramways department, has been awarded the D.C.M. for conspicuous gallantry and devotion to duty in laying and maintaining under heavy and continuous barrage a telephone line, and in getting through information of the most vital nature to headquarters.

Mr. G. W. Holford, general manager, Salford Corporation Tramways, has been asked to act as assistant to Alderman C. F. Spencer, of Halifax, who has been appointed director of the Central Kitchens Division of the Ministry of Food. At the request of Lord Rhondda, the Salford Tramways Committee have granted the required permission to Mr. Holford.

Mr. John O'Neill, whom many of our readers will remember as the manager of the Liverpool tramways before they were taken over by the Corporation, resides at Blundell Sands, near Liverpool. The *Liverpool Daily Post* says that he may be seen out almost daily on his tricycle, while indoors his leisure is devoted to sculpture, in which he is an adept.

Mr. Horace Wyatt, is the author of a small volume entitled "The Motor Industry," published by Sir Isaac Pitman and Sons, which deals with the present and future position of this branch of British engineering, including the development, products, and methods which brought the industry to the prosperous position which it had attained previous to the war.

Mr. George J. Gibson, traffic manager, Manchester, Sheffield, and Nottingham section of the Great Central Railway, has been appointed Director of Railway Transport under the Ministry of Food. Mr. Gibson has been with the Great Central Railway Company for fourteen years, and before that he was in the service of the London and South Western Railway. While Major Clow, superintendent of the line of the Great Central Railway, was absent in France last year on special duty, Mr. Gibson acted as superintendent.

Manchester Tramways Committee has recommended the following increases in salaries:—Mr. Jas. Wood, financial superintendent and assistant manager, from £600 to £750 per annum by three annual increments of £50 each; Mr. J. T. Oakes, traffic superintendent, from £500 to £600 per annum by two annual increments of £50; Mr. F. A. Mitcheson, accountant, from £400 to £550 per annum, by three annual increments of £50; Mr. G. R. Blackburn, from £400 to £500 per annum, by two annual increments of £50 each; Mr. D. G. Mallalieu, permanent way superintendent, from £350 to £400 per annum.

Mr. J. A. Robinson, borough electrical engineer, Salford, has been granted an increase in salary by three annual advances of £100, £100, and £50 respectively to a maximum of £1,250 per annum, the first advance to date from April 1, 1917. The Corporation have adopted a scale of salaries under which the maximum salaries of the deputy engineer will be increased from £340 to a maximum of £500 per annum, the mains engineer from £300 to a maximum of £375 per annum, the station superintendent from £250 to a maximum of £375 per annum, and the charge engineers from £200 to a maximum of £250 per annum.

Mr. Spencer Returns to Bradford.—The Bradford Tramways Committee on February 4 passed the following resolution:—"That in the opinion of this committee the time has now arrived for the tramways manager (Mr. C. J. Spencer), who has been engaged for more than a year on work for the Admiralty, to return to Bradford in order to resume active control of the tramways undertaking, which, while always requiring careful handling, is at the present time more than ever in need of the manager's personal and continuous supervision, and that the Town Clerk be instructed to communicate with the Admiralty and request them to release the tramways manager at an early date." Mr. Spencer, in a statement he made to the committee, said that all he was anxious to do was to give his best services to the country, and that he was ready to undertake duties under any authority if he was considered to be doing his best for the national cause. He quite realised that the tramways undertaking required his personal supervision, and was prepared to resume his former duties if the authorities were so minded to dispose of him. It was subsequently arranged that Mr. Spencer would return to Bradford about the middle of March, but that he should be available for Admiralty work when his services were specially desired for short periods. On taking up his usual duties at Bradford, Mr. Spencer will resume the honorary secretaryship of the Municipal Tramways Association.

TRANSPORT CONTROL FOR WEST RIDING.

Under the direction of Mr. R. Hobill, munitions transport officer for the West Riding of Yorkshire, a scheme of mechanical transport control has been brought into operation in that area. The Ministry of Munitions Transport Department at Quebec Chambers, Leeds, formulated the plans, which were based on replies received to a circular sent to traders in the area. The circular pointed out that the demands of the war made it a vital necessity for all privately-owned lorries and steam wagons to be utilised to their fullest capacity. The information received disclosed a large amount of light running owing to the absence of return loads and other reasons, and it is to remedy this defect that the scheme has been instituted. The official announcement states that the Department will arrange orders for loads for lorry owners who have vehicles working empty within the prescribed area. The charge, which begins from the time the lorry arrives for loading until the lorry is released, ranges from 5s. per hour to 12s. per hour for petrol lorries of 10 cwt. up to five tons capacity, 9s. for rubber-tired steam lorries up to five tons capacity, and 6s. for steel-tired steam lorries of a similar capacity. Trailers are 3s. per hour extra, and special rates can be arranged for regular journeys on long periods. Charges are collected by the Ministry of Munitions, who accept responsibility to pay the lorry owners, after deducting 5 per cent. from the amount received to cover expenses of administration. At a meeting of vehicle owners it was decided to accept the scheme after some revision of the rates.

REGISTRATION OF MOTOR VEHICLES IN LONDON.

The Public Control Committee has reported to the London County Council that the following registrations were effected and licences issued under the Motor Car Acts during the quarter ended December 31, 1917:—

Particulars of Registration.	Registered during Quarter.	Registered to December 31 1917.
Motor cars registered	1,396	106,492
Heavy motor cars registered	425	11,136
Motor cycles registered	791	52,817
Changes of ownership—motor cars	1,187	45,085
Changes of ownership—motor cycles	365	26,292
General identification marks issued	63	—
Copies of entries in register furnished	153	—
Licences to drive issued	9,031	560,752
Duplicate licences granted	160	—

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TRAMWAY AND LIGHT RAILWAY NOTES.

ASHTON-UNDER-LYNE.

TRAMWAY PURCHASE POSTPONED.

Ashton-under-Lyne Corporation have decided to apply to the Board of Trade for an order extending for one year the period in which they have the power to purchase that part of the undertaking of the Oldham, Ashton, and Hyde Tramways Company, Limited, which is within their borough.

BARROW.

RESTRICTED SERVICE.

Barrow Electric Tramways Company have notified the Corporation that, owing to the decrease in their staff, the company have been compelled to run fewer cars during the day.

DUNFERMLINE.

NEW DUNFERMLINE TO ROSYTH ROUTE.

The extension of the Dunfermline and district system to Rosyth is expected to be open for traffic in the course of a few weeks. Work was commenced on this route, which has been constructed at the special request of the Admiralty, in September last.

EDINBURGH.

THE PROPOSED EDINBURGH-QUEENSFERRY ROUTE.—CABLE TROUBLE.

At a meeting of the Tramways Committee of Edinburgh Town Council last week, it was reported that the negotiations with owners and local authorities in regard to the proposed tramway from Edinburgh to Queensferry had so far proceeded satisfactorily, and that in particular the scheme had met with favourable consideration from the Town Council of Queensferry. In consideration of representations made to the committee, it was agreed to depart from the original intention of terminating the line running down the Hawes Brae at Hawes Pier, and instead, to carry it by a single line to the Town Hall, a course probably involving the acquisition of property in the High Street This would be necessary in order to cope with the opposition service from the omnibuses, and it was agreed to incorporate the proposal in the Parliamentary bill to be promoted in March. It will also include the proposed alternative route which runs to Port Edgar by way of the road passing Dalmeny Station. —Mr. J. D. R. Cox, general manager of the Edinburgh and District Tramways Company, recently made a statement to representatives of the local newspapers with the object of preparing the public for interruptions of car services. Mr. Cox said it was impossible to get new cables to replace cables that have got into such a condition as to be no longer reliable. Priority permits have been obtained from time to time from the Ministry of Munitions for limited quantities of cable, but in view of the demands by Government authorities for steel required for munitions, it is now possible to obtain permits only for reduced quantities of tramway cable. Formerly there were spare cables on the drums at the depots, so that in the event of a cable showing signs of breaking it could be taken out. Now there are no spare cables, and those in use have been spliced and patched until they have ceased to be reliable.

GLASGOW.

TRAFFIC CONGESTION.

In common with many other cities Glasgow is experiencing great trouble in dealing with the congestion of tramway passengers. The daily struggle at various points to board the cars has become more and more intense and dangerous. Unfortunately the problem of remedying these conditions is not easy of solution. To some extent it is aggravated by the difficulty of repairing cars, and the consequently depleted service, but this is not altogether the root cause of the trouble, and in Glasgow there are certain obvious objections to setting up barriers in the streets that would be necessary for the queue system.

LEEDS.

PASSENGER'S LOST PARCEL—REARRANGEMENT OF STOPS.

The Leeds Corporation were the defendants in a county court action recently, in which a passenger sought to recover the value of a parcel lost whilst plaintiff was travelling on one of its cars. It was stated that a ticket for one penny was given in respect of the parcel, which, being somewhat heavy, was carried on the platform of the car, the passenger sitting inside in the ordinary way. The conductor found that the parcel had rolled off the platform into the road, the car was stopped, and the plaintiff went to look for it, but without success. It was contended that the Corporation were bailees for the purpose of carrying the parcel for value, and there had been gross negligence on the conductor's part. The Corporation set up a special defence under the Leeds Corporation Consolidation Act, 1905, and the by-laws which provided for the carriage of personal luggage at passenger's risk, provided its weight did not exceed 28 lb. It was denied that any charge was made or ticket given in respect of the parcel in question. It was further urged that (as it consisted of goods relating to plaintiff's business) it was not personal luggage, but merchandise, and though actually carried free should have been paid for. In any case no negligence had been proved. The judge held that the parcel had not been paid for as merchandise, and that there was no negligence on the part of the conductor. He therefore found for defendants. With a view to obviating congestion and rushes of passengers for cars, a scheme whereby the stopping places have been extensively rearranged has been adopted by the Leeds Tramways Committee. Barriers will be erected in Briggate and other points, and a number of stops in the central portions of the city will be abandoned. It is anticipated that the measures now adopted will tend to obviate the crowding of passengers at the busy centres, and the introduction of the queue system will do away with the struggling to board the cars which has been the chief source of complaint.

MORECAMBE.

OMNIBUS SCHEME.

Morecambe Corporation in a bill in the present session is seeking powers to run motor omnibuses as part of the tramway undertaking within the borough and in the borough of Lancaster, the urban districts of Carnforth and Heysham, and in all the townships in the rural districts of Lancaster and Lunesdale. The area comprises about 216 square miles. The bill provides for the conveyance of passengers and parcels, and powers are included to acquire the necessary land and buildings for these purposes. It is reported that various local authorities affected by the bill intend to oppose the powers sought by the Corporation on the ground that the service will be provided mainly for the purpose of the pleasure traffic emanating from the borough during the summer months. It is contended that the main roads affected are in places unsuitable for motor omnibus traffic, and that the secondary and district roads are wholly inadequate for the purpose.

NEWCASTLE.

WORKMEN'S CARS.

In reply to complaints as to alleged overcrowding on workmen's services, Mr. E. Hatton, general manager of the Newcastle Corporation Tramways, has recently stated that during the week preceding the outbreak of war there was an average of 97 to 99 early morning workmen's cars running over the system, the weekly total of workmen passengers being 108,000. Last week, with the exception of Sunday morning, the lowest number of workmen's cars out was 143, and the highest 165, and the number of workmen passengers was 248,889. The largely increased traffic was only handled with difficulty by the aid of auxiliary labour, and when recently, owing to bad weather and sickness of employees, it was found impossible to run as many cars as usual, the fact was frankly stated by notices exhibited in the cars.

NORTHAMPTON

DIFFICULTIES IN MAINTAINING SERVICES.

Mr. J. F. Cameron, manager of Northampton Corporation Tramways, has presented a report to the Town Council in regard to the irregular running of the cars. He states that during the last three months 13 female conductors lost 2,054 hours owing to illness and other causes, and 839 shifts had to be rearranged owing to the absence of staff for the same reasons. Women conductors were late for duty on 52 occasions, and on 42 occasions failed to arrive at all. Motormen were late for duty on 23 occasions, and on 19 they failed to arrive. Mr. Cameron records his appreciation of the splendid service given by some at least of the women conductors. Since the outbreak of war, there have been the following changes of staff in the various departments :—Office staff, 12 ; power station, 33 ; car depot, 47 ; motormen, 75 ; men conductors, 47 ; women conductors, 78. Under such circumstances Mr. Cameron remarks that it is impossible to give the same efficient service, and taking into consideration these changes, among other difficulties, the public has little cause to complain. On the occasion of the recent snowfall, every man on the snow gang worked untiringly with the means at his disposal to clear the track. A few of the staff, including himself, worked nearly fifty hours without sleep.

PAISLEY

PROPOSED ABOLITION OF HALFPENNY FARES.

At the monthly meeting of the Paisley Town Council, a letter was read from Johnstone Town Council asking the former to meet them in conference with a view to opposing the application of the Paisley Tramway Company to abolish halfpenny fares. Ex-Bailie Baird said he thought they ought to confer with Johnstone, Renfrew and the County with a view to resisting the proposal. A small committee was appointed.

ST. HELENS

CARRYING EXCESSIVE NUMBER.

A somewhat exceptional case of overcrowding was revealed at St. Helens recently, when the driver and conductor of one of the local tramcars were summoned for permitting overcrowding. It appeared that no less than 33 persons in excess of the proper number were being carried, viz., 86 on a car licensed for 53. The passengers were all munition workers, and two tramway officials pleaded that they were helpless, the company being very short of staff. This the Chief Constable said he recognised, but felt some better means of regulation should be adopted, and hoped that the prosecution might

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be of service to the company in assisting them to obtain more men, or the return from the army of some of those who had been taken.

SOUTHAMPTON.

PARCEL CARRYING.

Southampton Corporation Tramways Department have inaugurated a parcels system which it is hoped will prove of assistance to local tradesmen and others. Parcels will be conveyed to different points on the tramway system by a freight car which has been constructed at the tramway works for the purpose, and every point on the tramways will be reached. Parcels must have affixed to them prepaid tickets, and can be handed to the conductor in charge of the car at any point on the route. Agents have been appointed at various places in the town to receive parcels. Anyone can call at the nearest agency, leave his parcel or receive parcels left for him. Two trips are being run daily by the car, one in the morning and the other in the afternoon.

YORK.

IMPROVED SERVICES—TRAILER CARS—FARES.

The report of Mr. J. W. Hame, the tramways manager, recommending certain changes in order to improve the service, has been accepted by the City Council. Mr. Hame states that the total number of cars in stock is 36, of which 21 are used for ordinary service and 12 for workpeople's service, the remaining three being invariably under repair or painting. There are also four trailers. The total seating capacity of the cars is 1,944. The small margin of cars is insufficient. As regards the lay-out of the six sections of tramways, Mr. Hame points out there is no circuit for turning cars which would enable any section to be worked separately. It has always been undesirable to turn cars at the station, as at that point there are more than 700 cars passing daily—upwards of one per minute. There are 23 departures from each side of the city each hour of the day. Complaints in regard to the service arise, mainly in bad weather, from those who are not regular users of the cars. At such times the accommodation is automatically much reduced, as few passengers are willing to travel outside. Failing the use of top covers, Mr. Hame says that trailer cars must be used to a much greater extent as soon as it is possible to do so, and that loops should be provided at the end of each section where trailers are to be used. At present the department has neither the spare cars nor the staff to deal with occasions of rush traffic. Mr. Hame recommends, among other changes, that the price of dinner hour and War Office tickets be increased by a halfpenny for each return journey; that the War Office quarterly contract tickets be discontinued, and that preliminary steps be taken to obtain powers to charge increased fares. The Tramways Committee propose to postpone for a time the increase of maximum fares, in order to await the result of the Board of Trade's consideration of the question. They have requested the general manager to report what further alterations of stages are possible, so as to charge the full penny per mile rate.

PATENT LIST.

Abstracted for "The Tramway and Railway World" from the Official Journal of Patents.

*** If the inventions have been communicated the names of the communicators are given below in italics.**

APPLICATIONS FOR LETTERS PATENT.

Axles for motor vehicles (1,678)—H. M. Butler and C. W. Davis.
Variable speed mechanism (1,770)—M. G. Clayton and L. I. Sherlock.
Speed indicating devices (1,761)—G. Constantinesco.
Warning signals for road vehicles (1,729)—E .S. Hodgson and A. B. Instone.
Transmission gear applicable to motor vehicles (1,682)—L. Murphy.
Combined safety guard and brake for front wheels of motor road vehicles (1,953)—W. H. Puttergill.
Automobiles (1,940)—H. J. Roberts.
Variable speed gearing (2,212)—S. C. Bone and T. S. Wilson.
Guard for motor vehicles and tramcars (2,224)—C. E. Copplestone.
Structure to facilitate boarding of tramway cars (2,347)—H. A. Hunt.
Rails for tramways and railways (2,185)—W. H. Jenkins.
Steering connection for road vehicles (2,035)—W. Rourke.
Tramway car, etc., passenger check system (2,280)—C. C. MacCarthy.
Air and gas controlling for internal combustion engines of motor vehicles (2,567)—J. Berry.
Motor vehicles (2,647)—S. B. Bignold.
Gearing (2,779)—British Thomson-Houston Co. (*General Electric Co.*)
Ticket punches (2,596)—H. Cross and H. M. Dudgeon.
Differential gear of motor vehicles (2,459)—Crossley Motors, Limited.
Clutch pedal change speed arrangement (2,759)—H. Dorrington.
Skid and jack for motor vehicles (2,555)—M. Edwards.
Motor vehicles (2,732)—C. W. Fulton.
Friction driving and speed variation gears (2,609)—A. G. Grice.
Motor vehicles (2,563)—A. Horrocks.
Gaseous fuel containers for motor vehicles (2,760)—G. Mason.
Means of adjusting tramway and railway points (2,623)—J. Murray.
Air brakes (2,533)—H. Pieper.
Railway chair and rail wedge (2,692)—W. S. Reed.
Road wheel for motor cars (2,687)—A. O. Sarson.
Axles for motor vehicles (3,102)—H. M. Butler and C. W. Davis.

LONDON

"SAFETY FIRST" COUNCIL

"FREEDOM FROM ACCIDENTS" COMPETITION

OWNERS and users of motor vehicles of all kinds are asked to urge their drivers to enter the above competition, the object of which is to encourage, by the award of money prizes and badges of merit, the exercise of care and discretion in the performance of duties.

Manufacturers and designers are invited to submit suggestions for a "Safety" device to be attached to the front of motor vehicles, with a view to the prevention of traffic accidents.

Fewer accidents mean greater public confidence in motor vehicles. The London "Safety First" Council appeals to the Motor Industry to support its campaign, which has already increased the safety of the streets.

Organisations represented on the Council include—

ASSOCIATIONS	COMPANIES	TRAMWAYS
Tramways and Light Railways Association	Tramways (M.E.T.) Omnibus Co. Ltd.	Barking Council
Institution of Municipal and County Engineers	London General Omnibus Co. Ltd.	Bexley Council
Royal Automobile Club	Thos. Tilling, Ltd	Croydon Corporation
Roads Improvement Association	National Steam Car Co Ltd.	East Ham Corporation
Commercial Motor Users' Association	Associated Omnibus Co. Ltd.	London United
Automobile Association	General Vehicle Co. Ltd.	Metropolitan Electric
London Cartage Contractors' and Horse Owners' Association	British Motor Cab Co. Ltd.	South Metropolitan
		Walthamstow Council
		Wes Ham Corporation

Full particulars respecting the Council's operations can be obtained from the Hon. Secretaries, LONDON "SAFETY FIRST" COUNCIL 31 Westminster Broadway, S.W.1

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ENGINE PACKING
MANUFACTURERS
(Flax, Asbestos and Cotton)
And all Engine Room Stores
ATTWATER & SONS
Hopwood Street Mills, PRESTON
Telegraphic Address: "Attwaters, Preston."

STEAM CONDENSING PLANT.
VACUUM PUMPS AND EVAPORATORS.
MIRRLEES WATSON
THE MIRRLEES WATSON CO. LTD., GLASGOW

For TRAMS AUTOMOBILES, &c.
For 'BUSES, AIRCRAFT, &c.
TRIPLEX SAFETY GLASS
Catalogue mailed on request.
The Triplex Safety Glass Co. Ltd.
1, Albemarle St., London, W.1
Contractors to H.M. Government.

Rear axle speed change gear (2,830)—A. G. Canham.
Fuel tanks, etc., for motor vehicles (2,940)—R. Caudron.
Change speed gear (3,171)—A. T. Collier.
Trolley heads (3,008)—F. Haigh, and others.
Ball and socket drive for back axle of motor vehicles (2,979)—N. Isherwood.
Operating mechanism for variable speed and torque gearing (2,871)—Leyland Motors, Limited, and J. G. P. Thomas.
Railway traffic controlling apparatus (2,907 and 2,908)—McKenzie, Holland and Westinghouse Power Signal Company.
Lifting jacks (2,841)—R. W. Maudslay and Standard Motor Co.
Strap-hanging devices for tramcars, etc. (3,215)—W. T. Nicholson.
Means for starting tramway cars, etc. (2,855)—T. B. O'Brien and J. Phillips.
Variable speed gears (3,037)—B. W. B. Puckle.
Variable speed gear (3,004)—C. Ter Cock.
Starting devices for motor vehicles (2,891)—J. Wilson.
Air brake connections (2,926)—S. A. Rousseau.

Specifications Published.

1917.

Railway, etc., mechanical signalling device (36—*112,305*)—D. B Miller.
Automatic electric control of petrol electric and other electric transmission vehicles (38—*112,306*)—P. F. Smith and V. S. Robinson.
Rack and pinion lifting jacks (5,041—*112,358*)—O. Imray (*Trewhella Brothers Proprietary*).
Motor vehicles (5,470—*112,360*)—F. B. Dehn (*Parrett Tractor Company*).
Vehicle direction indicator (11,741—*112,396*)—J. Peyre.
Change speed mechanisms (137—*112,489*)—E. C. R. Marks (*Lynn Superior Company*).
Hydraulic clutches for motor vehicles (2,312—*112,536*)—J. Healy and A. E. Carter.
Brake mechanism for railway and like vehicles (4,154—*112,549*)—S. T. Gresham and J. M. Gresham (executors of F. J. Gresham, deceased) and G. Kiernan.
Lifting jacks for motor road and other vehicles (4,375—*112,551*)—F. L. Rapson.
Motor vehicles (5,300—*112,561*)—S. O. Edmonds.
Motor vehicles (11,961—*112,595*)—D. S. Cox.
Tramway rail (12,743—*112,598*)—W. H. Puttergill.
Automatic train stops (8,425—*109,434*)—National Safety Appliance Company.
Driving and steering axles for automobile vehicles (11,926—*112,745*)—P. J. F. Batenburg.
Fluid pressure braking systems (12,726—*112,748*)—W. V. Turner.
Method for guiding the electric wire into the groove of trolley wheels of tramway cars (1,113—*112,804*)—T. Main.
Keys for securing railway rails in their chairs (9,679—*112,896*)—R. Bowen.
Electric transmission of signals (9,898—*112,897*)—E. A. Laidlaw and W. H. Grinsted.

Colonial and Foreign Tramways Traffic Returns.

NAME OF COMPANY.	1917. WEEKS ENDED. Feb. 3.	Feb. 10.	Feb. 17.	Feb. 24.		1918. WEEKS ENDED. Feb. 2.	Feb. 9.	Feb. 16.	Feb. 23.		AGGREGATE. Wks.	1918.	Increase or Decrease.
	£	£	£	£	£	£	£	£	£	£		£	£
Anglo-Argentine	47.614	50.673	53 000	47.936	...	50.620	55 428	53.304	54 377	...	8	423.144	+ 24.972
Calcutta ... ... Rs.	67.257	68 055	68 772	71.958	...	71.435	72.205	70.548	73 556	...	8	564.903	+ 15.022
Madras	...	(2 weeks)	38 622	...	...	...	(2 weeks)	37.363	...	...	26	115.641	+ 10,215
Pernambuco	3.655	3.441	3.840	...	...	4.759	4.759	4.927	...	...	7	33,191	+ 8.041

Companies Issuing Monthly Statements.

	1916. Sept.	October.	Nov	Dec.	1917. Jan.	Feb.	1917. Sept.	October.	Nov.	Dec.	1918. Jan.	Feb.	Wks.	AGGREGATE. 1917-18.	+ or −.
	£	£	£	£	£	£	£	£	£	£	£			£	£
Ballarat & Bendigo ..	3.390	3 430	3.090	3.981	...	...	3.560	3.552	3 179	4.127	...	...	40	32.971	+ 360
Brazilian Traction Mlrs	7138000	7262000	7160000	7312000	...	...	7925000	8006000	7695000	8069000	...	...	52	92.200.000	+7,315.000
Brisbane	32 530	32 760	26 740	32 910	33 020	29.800	31 600	33.580	32.900	35 019	34.500	32.009	8	66 509	+ 3.689
British Columbia	$ 414 811	445 263	472.767	496.959	...	...	457.709	491 964	525 629	555.555	...	...	26	2.923.660	+ 258.275
Buenos Ayres Lacroze	37 077	39 670	39 133	40 106	38 142	...	33 655	39.067	39 679	40 901	38 902	...	30	269 377	+ 340
Burma	23 749	29.768	26.824	32.551	23 802	...	26.168	28.955	27.761	26.224	25 429	...	26	161.251	+ 144
Cape Town	...	14 238	...	...	18.440	...	...	17 128	16 522	19.803	19.707	...	—	—	—
Carthagena & Herrerias	1 779	2 539	2 252	2.399	3.982	3.223	4 306	2.805	3.932	4.424	4.011	4.031	8	8 042	+ 837
Cordoba	13 313	13 533	12.836	...	...	...	12.463	12 481	13 339	...	...	...	34	108 715	− 2.137
East India	2 523	2 080	1.942	2.120	1.836	1.570	1 512	1 229	871	1.099	1.176	1.318	30	8.767	− 5.825
Kalgoorlie	2 788	2 716	...	...	...	...	3 063	2.795	...	...	...	...	43	26.923	+ 940
La Plata	3 993	4.434	3 140	4 437	4 315	...	3 450	4 069	3 741	4.606	4.711	...	4	4 711	+ 396
Lima	33 340	33.303	33 608	37.171	36 841	...	35.621	37.537	37.466	41.697	43.536	...	4	43.536	+ 6.695
Manaos ... ... Rs.	141 286	...	142.858	...	...	...	157.761	158.078	146.047	...	...	...	—	—	—
Mexico ... $	...	...	...	...	...	...	...	...	...	...	...	...	—	—	—
Monte Video	26 711	28 729	28 404	31 364	33 341	32 304	29 426	30.153	31 060	34.025	36.016	34.573	17	135 674	+ 10.261
Peruvian	$ 911.910	945 590	925.820	990 842	935.130	844.770	950.740	1047220	1034790	1101030	1189350	925.410	34	8 203.030	+ 917.638
Port Elizabeth	...	3 131	...	...	4 498	...	...	3 885	3 807	4.920	4.779	...	—	—	—
Rangoon	4 137	5 043	5 033	4.904	4.633	4.605	5.163	5 667	5.358	5.438	5.361	5.662	8	11.023	+ 1.785
Toronto ...	$ 913 535	907.460	911 829	...	...	...	1023517	1043886	1052000	...	...	...	47	10.986.998	+1,161.945
Winnipeg ...	$ 267.497	278 817	282 899	...	...	...	267.170	301.722	305.881	...	...	...	47	3.039.397	+ 16.227

(*Continued on page 178*

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TRAFFIC RETURNS—*continued.*

Tramways and Omnibus Undertakings in the United Kingdom.

NAME OF COMPANY OR CORPORATION.	1917. WEEKS ENDED.					1918. WEEKS ENDED.					AGGREGATE.		
	Feb. 3.	Feb. 10.	Feb. 17.	Feb. 24.		Feb. 2.	Feb. 9.	Feb. 16.	Feb. 23.		Wks.	1918.	Increase or Decrease.
	£	£	£	£	£	£	£	£	£	£		£	£
Aberdare U.D. Council	373	358	363	395	...	493	492	491	466	...	46	20.889	+ 2.334
Aberdeen Corporation	1,728	1,717	1,739	1,737	...	2,262	2,314	2,167	2,134	...	38	82.529	+ 10.379
Accrington Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Ayr Corporation	253	252	258	268	...	337	329	324	331	...	41	18.849	+ 2.441
Bath Electric	*	...	...	...	...	...	...	...	...	...	—	—	—
Belfast City	5,371	5,256	5,348	5,528	...	7,347	7,319	7,305	7,543	...	47	312.331	+ 45.462
Birkenhead Corporation	1,441	1,383	1,462	1,502	...	1,851	1,886	1,931	1,943	...	47½	72.422	+ 14.631
Birmingham Corporation	15,828	15,451	16,064	16,265	...	20,058	20,273	20,410	20,354	...	47	878.131	+129.964
Birmingham Corp. Motor Omnibuses	850	807	849	817	...	1,174	1,189	1,191	1,216	...	47	50.611	+ 4.894
Blackburn Corporation	969	960	...	...	...	1,639	1,571	...	...	...	45½	67.531	+ 11.857
Blackpool and Fleetwood	*	...	...	...	...	...	...	...	...	...	—	—	—
Blackpool Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Bolton Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Bournemouth Corporation	2.716	1,703	1,715	1.826	...	2,308	2,396	2,337	2,472	...	47½	120.581	+ 14.143
Bradford Corporation	6,053	5,922	6,122	6.175	...	7,226	7,018	7,432	7,987	...	47	359.426	+ 42.884
Brighton Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Bristol	*	...	...	...	...	...	...	...	...	...	—	—	—
Burnley Corporation...	1,480	1,500	1,473	1,571	...	1,938	2,023	1,977	1,956	...	—	—	—
Burton-on-Trent Corporation ...	256	246	253	262	...	376	386	377	370	...	47	15.272	+ 2.188
Bury Corporation	1,228	1,214	1,324	1,321	...	1,596	1,551	1,649	1,612	...	47½	77,154	+ 10.560
Cardiff Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Chatham and District	1,005	996	1,093	1,118	...	1,115	1,163	1,227	1,090	...	8	8.301	+ 279
Chesterfield Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Colne Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Cork Electric	427	419	412	491	...	573	585	604	587	...	8	4,184	+ 842
Croydon Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Derby Corporation	981	973	1,022	1,008	...	1,306	1,251	1,292	1,257	...	47	57.472	+ 4.973
Dover Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Dublin and Lucan	*	...	...	...	...	...	...	...	...	...	—	—	—
Dublin United	5.660	5,578	5,739	6.089	...	7,429	7,497	7,368	7,267	...	8	54.509	+ 9.731
Dundee City	1,267	1,300	1,317	1,303	...	1,564	1,722	1,728	1,537	...	40½	62.896	+ 7.166
East Ham Corporation	1,098	1,039	1,128	1,134	...	1,287	1,345	1,337	1,238	...	47	64.172	+ 4.380
Exeter Corporation	303	318	328	325	...	358	367	366	356	...	47	18.647	+ 57
Gearless Motor 'Buses	*	...	...	...	...	...	...	...	...	...	—	—	—
Glasgow Corporation	23,081	23,272	23,086	23,396	...	26,610	26,754	26,278	26,958	...	38½	1,012.510	+113.803
Glossop (Urban Elec. Supply Co.)...	121	110	120	124	...	181	181	180	188	...	8	1,418	+ 421
Halifax Corporation	1,788	1,818	1,791	1,862	...	2,316	2,109	2,164	2,279	...	46½	112.856	+ 11.626
Halifax Corp. Motor Omnibuses ...	45	45	44	41	...	53	47	53	51	...	46½	2.292	− 3
Hastings and District	765	767	822	37	...	971	927	963	996	...	8	7,473	+ 570
Huddersfield Corporation	2,554	2,499	2,505	2,612	...	3,143	3,119	3,309	3,577	...	47	150.642	+ 18.813
Hull Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Ilford U.D. Council	555	570	589	611	...	731	796	789	744	...	47	35.931	+ 4,732
Ilkeston Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Ipswich Corporation	352	367	369	378	...	579	594	610	603	...	47	31,156	+ 7,877
Isle of Thanet	193	205	226	222	...	200	200	187	170	...	21	3.587	− 1.613
Kilmarnock Corporation	158	154	160	168	...	224	217	221	226	...	40½	8,378	+ 1,262
Lanarkshire	2.260	2,298	2,339	2.279	...	2,952	3,137	3,210	3,314	...	8	22.448	+ 4.332
Lancashire United	1,645	1,556	1,606	1,752	...	2,546	2,574	2,592	2,587	...	8	18.092	+ 5,620
Leeds City	9,187	9,006	9,145	9,188	...	10,728	10,830	11,373	11,020	...	47	518,950	+ 60,794
Leicester Corporation	...	3,058	3,201	3,268	...	...	4,285	4,187	4,174	...	—	—	—
Leith Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Leyton U.D. Council	1,441	1,389	1,389	1,531	...	1,744	1,735	1,862	1,641	...	47	87,524	+ 12.266
Liverpool Corporation	13,653	13,179	13,598	13,972	...	16,688	16,644	16,583	16,667	...	7½	126,756	+ 19.240
Llandudno and Colwyn Bay ...	255	151	179	177	...	236	253	241	250	...	12	2,764	+ 540
London County Council	43.276	39,076	42,620	43,991	...	53,779	52,747	56,189	51,904	...	46½	2,563,194	+361,394
London General Omnibus	*	...	...	...	...	...	...	...	...	...	—	—	—
London United	*	...	...	...	...	...	...	...	...	...	—	—	—
Lowestoft Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Maidstone Corporation	158	158	165	173	...	247	243	247	232	...	47	11.523	+ 1,542
Manchester Corporation	17,642	16,430	17,663	18.213	...	23,576	23,081	23,468	23,547	...	47	995,284	+119,857
Metropolitan Electric Tramways ...	*	...	...	...	...	...	...	...	...	...	—	—	—
National Steam Car	*	...	...	...	...	...	...	...	...	...	—	—	—
Nelson Corporation	193	180	189	193	...	281	245	242	237	...	47	11.130	+ 1,230
Newcastle-on-Tyne Corporation ...	6.744	6.619	6.668	6.812	...	8,408	8,432	8,600	8.479	...	47	372,970	+ 56,992
Newport (Mon.) Corporation ...	*	...	...	...	...	...	...	...	...	...	—	—	—
New St. Helens and District ...	901	889	875	949	...	1,284	1,269	1,261	1,270	...	34	47,197	+ 11.104
Northampton Corporation	664	661	650	673	...	867	923	894	882	...	47	39.773	+ 6.049
Nottingham Corporation	3,623	3.572	3,631	3,654	...	4,943	4,740	4,824	4,706	...	47	211.230	+ 29.130
Oldham Corporation	2,112	2.136	2.281	2.277	...	2,908	2.835	3,350	2.908	...	48	136.011	+ 20,106
Portsmouth Corporation	1,931	1,908	2,046	2.050	...	2,597	2,749	2,719	2.605	...	—	—	—
Preston Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Provincial	...	...	...	...	...	...	...	...	...	...	—	—	—
Reading Corporation	761	767	805	828	...	1,065	1,109	1,166	1,121	...	47	49.992	+ 9.867
Rhondda Tramways	1,198	1,206	1,238	1,310	...	1,651	1,585	1,590	1,551	...	8	11.312	+ 1,857
Rochdale Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Rotherham Corporation	1,586	1,567	1,562	1,594	...	1,928	2,053	2,002	2,051	...	48½	87,567	+ 13,056
Salford Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Sheffield Corporation	10,747	10,542	10,678	10,672	...	12.851	12,933	13.190	13,098	...	48	584.770	+ 76,743
Southampton Corporation	1,467	1,463	1,509	1,530	...	2,230	2,242	2,292	2,176	...	45½	97,176	+ 19,521
Southend-on-Sea Corporation ...	565	578	595	601	...	674	671	711	625	...	47	40.901	− 675
South Metropolitan Tramways ...	*	...	...	...	...	...	...	...	...	...	—	—	—
South Shields Corporation	801	775	790	795	...	1,113	1,012	1,036	1,032	...	47	45.566	+ 6,103
Sunderland Corporation	1,520	1,497	1,532	1,547	...	1,934	1,986	2,002	2,030	...	47	87.796	+ 10.144
Sunderland District	637	598	589	...	...	919	856	849	...	...	15	12,026	+ 2,628
Swindon Corporation	188	182	186	192	...	282	287	292	286	...	46½	12.784	+ 3,201
Torquay Tramways	358	433	408	440	...	714	633	669	660	...	8	4,841	+ 1,521
Tramways (M.E.T.) Omnibus Co...	*	...	...	...	...	...	...	...	...	...	—	—	—
Tyneside Tramways and Tramroads	603	608	586	610	...	879	848	850	857	...	8	5.862	+ 1,419
Wallasey Corporation	1,113	1,085	1,107	1,174	...	1,437	1,430	1,456	1,458	...	47½	73 452	+ 10.131
Walsall Corporation	764	729	776	770	...	1,079	1,112	1,082	1,045	...	47	47.248	+ 8.771
Walthamstow U.D. Council ...	873	872	895	932	...	1,094	1,170	1,179	1,088	...	47	57.185	+ 7.165
Warrington Corporation	481	467	475	482	...	742	752	759	744	...	47	28.261	+ 4.848
West Ham Corporation	2.869	2.719	2.852	2.924	...	3.534	3.551	3.736	3.377	...	46½	170.713	+ 21.880
Wigan Corporation	1,603	1,519	1,590	1,645	...	2,220	2,240	2,263	2,196	...	47	96,159	+ 17,047
Wolverhampton Corporation ...	*	...	...	...	...	...	...	...	...	...	—	—	—
Yorkshire (West Riding)	1.807	1.827	1,742	1,755	...	2,263	2.564	2,516	2,363	...	8	18.623	+ 4.447

* TRAFFIC RETURNS SUSPENDED.

Owing to the European war, the Government have taken over the railways of Great Britain as from August 4, 1914, and the issue of traffic returns has been suspended. Consequently the traffic returns of the electric railways which usually appear on this page cannot be given.

The Publication of the Traffic Returns of the Tramways marked with an asterisk in the above table have also been suspended during the war.

TRAMWAY DIRECTORIES.

A useful feature of this issue is the directory of electric railways and electric tramways which will be found among the advertising pages. This directory contains the names of the chief officials and the principal particulars relating to each undertaking.

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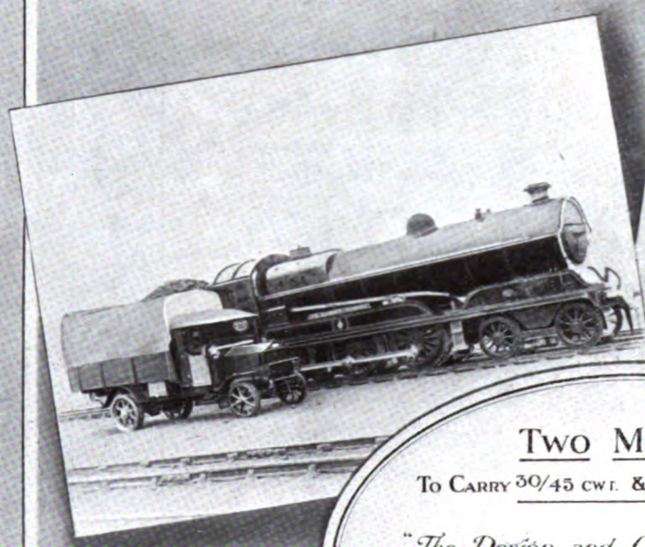

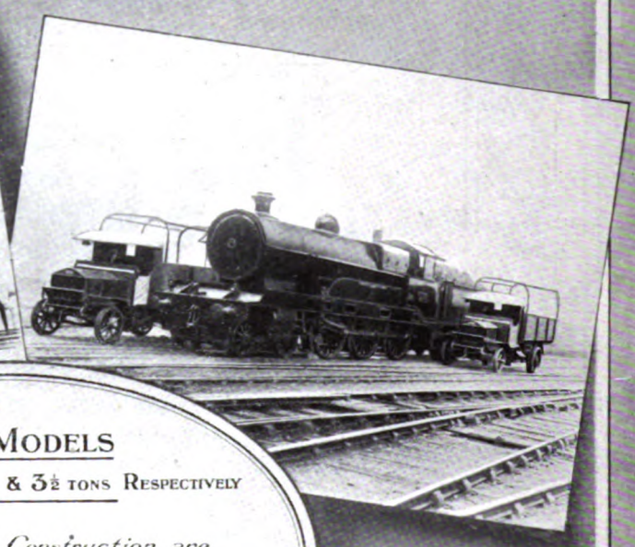

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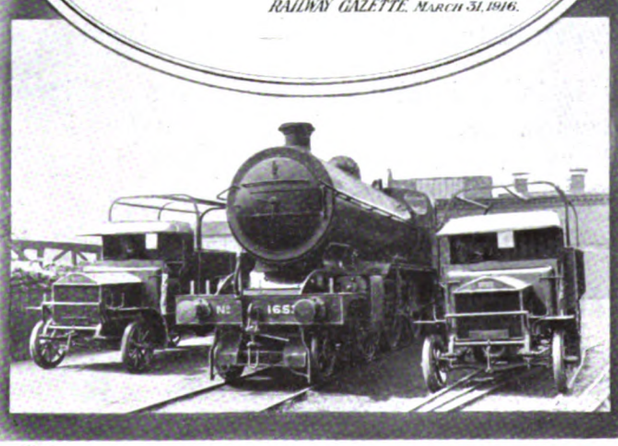
IN PEACE

USED BY THE LARGEST CARRYING COMPANIES AND COMMERCIAL HOUSES.

IN WAR

USED BY THE BRITISH AND ALLIED GOVERNMENTS.



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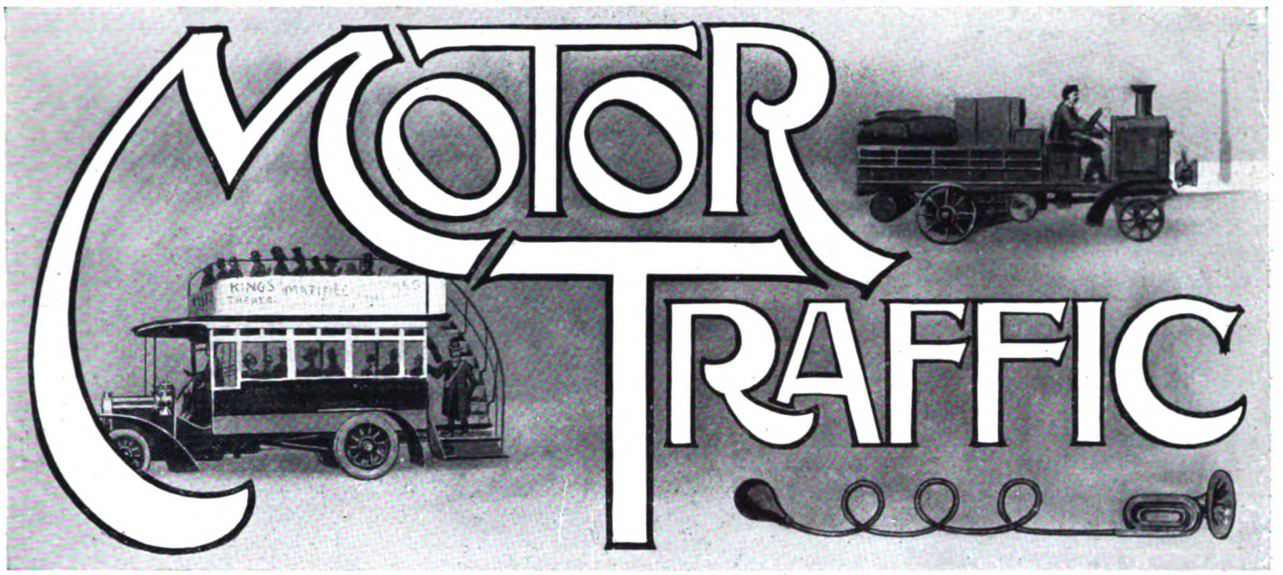

An important question is gradually opening up as to the extent of the powers which ought to be possessed by local authorities either to control or to run motor services for passengers or goods. The question is largely a political one. That is to say, anyone of strongly socialistic tendency would immediately agree that all public services should undoubtedly be run either by the nation or by municipalities, and that the collection and distribution of parcels and goods ought to be similarly effected. On the other hand, politicians of a different colour would take a different view. The question is not really whether the utility of local government bodies should be curtailed, but whether that utility is best expressed when the local body is itself an important local trader or when it refrains from trading, and merely exercises a general beneficial influence in the interests of the public upon the trade carried on by individuals. In London the omnibus services are operated by companies, and are merely controlled by the common law and by the powers vested in the police to withhold the granting of licences. In most other British towns the licensing authority is the Town Council, which is also the owner of the tramways. The question arises as to whether it is a good thing for the owner of one system of carrying facilities to have the power of curtailing the operation of a competitor. Those who believe that competition is the first factor in efficiency are not satisfied with this position. The alternative to free competition appears to be the co-ordination of all facilities under one complete control. A compromise between these two appears to be faulty, since it prevents competition from being conducted on an equal basis, without preventing rivalry from existing. Thus it eliminates one of the chief benefits of competition without getting rid of its drawbacks. The system adopted in Paris is an interesting one. It consists of a very firm control on the part of the municipality, which is itself an owner of public service vehicles. The operating companies are granted monopoly rights in return for annual payments, under conditions which provide for a regular service by vehicles of approved types, together with payment of employees at specified rates.

* * * * * *

In the sphere of the trade vehicle the position is different. The local authority in this country cannot refuse to the individual the right to run a motor van or lorry provided the vehicle complies with the law. The local authority can, however, extend its tramway system to the inconvenience of other road users, and in some districts there are signs of an inclination to attempt to get control of the local business of carrying goods. For this purpose the local authorities must enter into competition with ratepayers who are in the carrying or haulage business. If it obtains powers to compete at all, it can almost certainly compete at an advantage, giving itself special facilities denied to others. A somewhat similar state of affairs arises when a municipality seeks powers to maintain and repair motor vehicles. Where the competition is with the garage proprietor or motor retailer, the suppression of this class, in the interests of the municipality, would be bad for the motor industry and for the general development of the motor movement, because it would rob the manufacturer of his agent. One can hardly conceive the local authority acting as the agent for any particular make of vehicle ; it would be far more likely to go into business as a manufacturer itself. Consequently, those who are primarily interested in the prosperity of the motor industry, and the increased general use of motor haulage, are not inclined to approve of the attempts that are being made by some Corporations to obtain powers of the kind indicated. Meanwhile many municipalities are becoming motor owners on a fairly large scale, and one can see good reason in such cases for the establishment of local traffic departments in which all the municipal vehicles, whatever the class of service in which they are engaged, would be garaged and repaired under the general superintendence of a single department which in towns owning tramways would naturally be that of the tramway manager. The only question is whether improvements on these lines will not inevitably suggest to those immediately concerned the possibility of extending their sphere of operations and entering into direct competition with local traders. This form of rivalry in the transport of passengers and light goods already exists in a number of towns and districts in which tramway companies have for their own protection wisely formed motor transport offshoots of their undertakings. The result has been to confer advantages on the public which could not have been so efficiently given by small individual enterprises. Regarded on the whole, participation in the commercial and industrial aspects of motor transport is not likely to appeal to many municipal bodies. It is undeniable, however, that at this juncture, when transport has got to be co-ordinated and organised for the furtherance of the war, municipal or large company-owned motor undertakings would be of great national and local

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advantage, particularly to rival business firms whose antagonistic claims for their own delivery services have prevented anything like an extensive co-ordination by the local transport departments of the Ministry of Munitions and the Food Committees.

The evidence given by Mr. Bristow, secretary of the Commercial Motor Users' Association, before the Gas Traction Committee was not, taken altogether, such as to endorse the optimistic hopes of those who have pioneered the use of coal gas at atmospheric pressure as a fuel. From it one gathers that commercial users have often found gas bags somewhat expensive in upkeep and subject to rapid wear and tear. One is led to imagine, too, that injury from overhanging branches and wires has been a somewhat frequent occurrence. Emphasis is laid on the fact that in a very high wind it is almost impossible to use a gas bag at all, and the utility of the method is thus much restricted, particularly in coastal districts. In every day commercial work yet other difficulties are encountered. These are connected partly with the fact that gas is not always available when and where required; partly with the lack of standardisation of the fittings that are required when supplies of gas are taken on board; and partly with the difficulty of negotiating private roads spanned by arches or of entering premises with low doors. This last point is really an argument against carrying the gas bag upon the roof of the car, but Mr. Bristow deals at some length with the alternative of carrying it upon a trailer, and points out that there are many arguments against this course. One is the difficulty of manœuvring, and particularly of backing, in awkward positions. Another, perhaps less obvious but none the less real, is the danger of intentional damage being inflicted upon the gas bag by boys in the street if the contrivance is placed within their reach.

* * * * * *

One section of the evidence sets out to show that the pecuniary saving due to using gas instead of petrol is for various reasons not large. It appears that up to the present only a very small percentage of commercial vehicle owners have willingly adopted coal-gas, and that if its use is to be made in any sense compulsory, it is imperative that a fairly generous ration of petrol should be allowed in respect of all vehicles normally using gas. The need for this is partly due to the loss of about 20 per cent. of power, noticeable when gas is used. This sometimes renders the assistance of petrol necessary on steep hills. Another point is that there must be ample provision against the contingency of running short of gas when some distance from a source of supply, or failing to get supplies at points where they could reasonably be expected because of temporary local shortage or for other reasons. Then there is the question of keeping the vehicle in commission when gales are blowing, and sundry other eventualities. It is suggested that there are plenty of commercial users waiting for compressed gas to become available, but it is clear that the "gas bag" method is very generally regarded as a makeshift, and not very highly esteemed as a real competitor of liquid fuel.

The composition of the Road Transport Control Board is not such as to lead us to expect from the Board any very clear indication of a particularly intimate understanding of the details of the commercial operation of motor vehicles. The official element is all-pervading, and there does not appear to be a single member who is known as an expert in the economic operation of motors or in the organisation of civilian transport services One is glad to note the inclusion of Col. Foster as the representative of the War Department, because this ensures that the Board will not lack sound advice on technical matters, or on organisation so far as military methods and principles can be advantageously applied to solve the very difficult problem of maintaining essential road transport throughout the British Isles. The chairman of the Board knows all about the petrol shortage, and is accustomed to classifying vehicles in various categories according to their presumed degree of usefulness. Of the qualifications of the other members we hesitate to speak, since their names are not known to us in connection with motor traffic. On the whole, we cannot help feeling that the Board falls very far short of the ideal, if it is intended to initiate constructive reforms, or to adjudicate on proposals of a practical character, put forward as the result of experience in the operation of commercial motor vehicles. To us it is inexplicable that, when a body of this kind was being formed, the opportunity of enlisting the help of practical authorities on matters of road transport should have been totally neglected. In making the appointments the President of the Board of Trade has evidently been guided by a desire to steer clear of the senseless antagonism of railway interests towards road motor transport, but it is not encouraging to find that the motor interest has also been ignored. Had it been intended that it should act as a judicial body, with functions more or less analogous to those of the Railway and Canal Commissioners, this strictly official constitution might have been readily acceptable. As, however, its powers are to be of an executive character, one can only reiterate that its members might have been chosen with more discrimination.

The proposal for the inauguration of a new home industry for the production of motor spirit and fuel oil, recently put forward by a group of members of the Institution of Petroleum Technologists, does not herald a new epoch or claim to solve our fuel difficulties. It professes only to be a contribution towards the solution of a great problem. Briefly the suggestion is that we should set about the utilisation of our supplies of cannel coal, torbanite, and blackband ironstone, hitherto—for one reason or another—very much neglected. A careful comparison with the results obtained by the Scottish Shale Companies, made in the light of sound scientific knowledge as to what products can be obtained from the minerals mentioned, and in what quantities, leads to the conclusion that the new industry should be well able to pay its way as a commercial undertaking. Its dimensions would never be huge, if we take our present total requirement of fuel oil and motor spirit as the standard against which to measure it. It appears, however, that we are at present neglecting to utilise the source of what might be an annual supply of some six or seven million gallons of good petrol substitute, and some 400,000 tons of fuel oil. The shortage of man-power may at the moment be sufficient answer to the question of why this neglect continues, but we may at least hope that it will be remedied at the earliest opportunity.

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ARMY LORRIES FOR FOOD DISTRIBUTION.

The food question is rapidly assuming serious proportions, but we have not heard of any attempt being made to relieve the position by making better use of the Government transport services, or to release motor vehicles in the hands of the Government in order that the wholesale provision merchants may have an opportunity of doing something themselves in transportation. It is clearly better to take steps to ensure that the resources of those who are authorised to do this work in the ordinary way of business are adequate to existing needs rather than to set up an entirely new organisation for the purpose. The real shortage of staple foodstuffs has been only one factor in the present condition. Another factor which has had great influence is, in our opinion, a lack of transport facilities and too much control. At the beginning of the war, owing to the country's unreadiness, it was necessary that all motor vehicles suitable for Government service should be taken, but the wisdom of persistently starving the civil transport industry which has been practised since August, 1914, is open to question.

Great things are now expected from the compulsory rationing of meat, butter, and margarine, and provided the people are able to get the permissible quantities of these foods the scheme should in time come to work smoothly enough. But the regular and equitable distribution of perishable food can only be carried out by means of an adequate transport system in the hands of men who understand the business, and for some reason best known to themselves the permanent officials who appear to control the Food Controller seem determined to prevent food distribution taking its natural course.

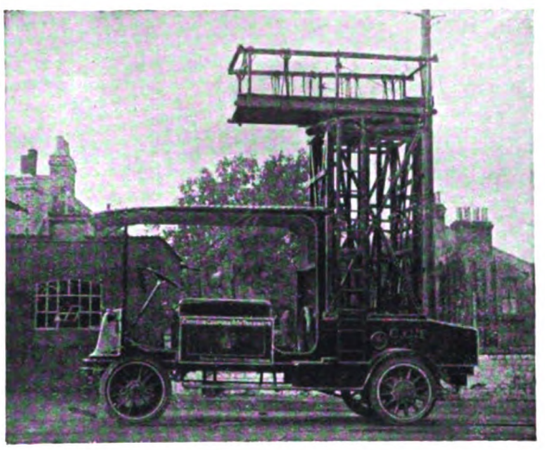
Control by Government of the transport facilities has brought confusion to the industry, and threatens the existence of a number of distributing agencies of national importance. The fixing of maximum prices for certain articles of food has inevitably affected London and other large cities to a greater extent than agricultural towns, the obvious reason being the cost of transport. Surely it is only reasonable to suppose that in fixing the price of an article some thought should be given to its place of origin, and arrangements made to transport it to places of sale. Nothing, however, appears to have been done in this direction, so that as a consequence unequal distribution with shortage of supplies in some parts and excess in others is the result.

We are strongly of opinion that the time has arrived when it is necessary either for the Government to evolve a comprehensive scheme in conjunction with practical transport men for the distribution of food for the civil population by means of the large number of idle army lorries, or as an alternative to permit the manufacturers of motor vehicles to supply the necessary number of machines to the traders, and allow them in turn to supply the needs of the people as far as available stocks will permit. To some extent the position may be eventually met by the Road Transport Board, but as this Board will consist of representatives of six different departments, including the Post Office and the Ministry of Munitions, considerable time will elapse before definite results can be expected. In the meantime the demand for the transport of food is urgent.

CROYDON'S ELECTRIC TOWER WAGON.

The accompanying illustration shows the neat design of an electric tower wagon in use by the Croydon Tramways Department. The chassis is an Edison G.M. type, with an A6 battery (225 A.H. capacity), the tower having been purchased from Messrs. Rawlinson and Son, of Blackburn, and the body built and the whole erected in the department's own workshops. It is driven and maintained by the linesman and his mate, and carries ample tools, spares, etc., in the roomy tool box provided at the rear. Portable electric lights for night work are also provided.

It has been found that the most useful characteristic of a vehicle of this design is that it is always ready, and can be on its way to an emergency call in the shortest



possible time, manœuvring in and out of traffic with the greatest ease during a lengthy repair, which minimises the delay to the cars.

In regard to the cost, although it is yet too early to give any reliable figures, it is found to be very favourable in comparison with the horse tower wagon and driver, whilst the motor allows more frequent inspection, resulting in less interruptions from line defects. During the six months which it has been in commission, the wagon has covered 1,800 miles without a hitch, and Mr. T. B. Goodyer, general manager of Croydon Corporation Tramways, informs us that it has required very little attention.

G.W.R. ROAD MOTOR SERVICES.

The Great Western Railway Company has always occupied a foremost position in regard to its road motor services, which to a large extent are run as extensions of the line itself. The introduction of these services has served a valuable purpose in improving communications with outlying districts. They have, therefore, always been in the nature of utility services, the maintaining of which has been of local importance. It may consequently be affirmed that where the service has been maintained in spite of all the demands and the difficulties of the past year or two, the purpose it serves is particularly valuable and the responsibility devolving upon those in charge more than usually onerous. The successful maintenance of these services, notably in the West of England and South Wales, with depleted staffs, ever-decreasing repair facilities and various other difficulties, calls for qualities in service of the highest possible kind. As showing what can be done with the exercise of care, skill and diligence, a leading driver and a very small staff kept up continuously for a whole year the service of two cars between Neath station, Pontardawe, and Waenleyshon, covering with two vehicles a total distance of over 42,000 miles without interruption or breakdown.

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MOTOR TRAFFIC.

THE IRONCLAD EXIDE ACCUMULATOR.

In these days of rapid progress in the various branches of electrical development, it is difficult to keep abreast with the various improvements which are being brought about, especially in those particular lines of the industry with which one is not directly brought in contact. This sometimes results in the impression that the state of affairs with which one was familiar possibly at some rather remote period is still to-day current practice, ignoring altogether not only the improvements in detail which in the aggegate may have resulted in a distinct advance, but also in modifications of design which may still further have enhanced the value of the results obtained.

This is particularly true of such an article as the lead battery, in the manufacture and operation of which attention to detail plays such an important part. To the average person, particularly to those interested in electric vehicles, to talk of an "accumulator" conveys

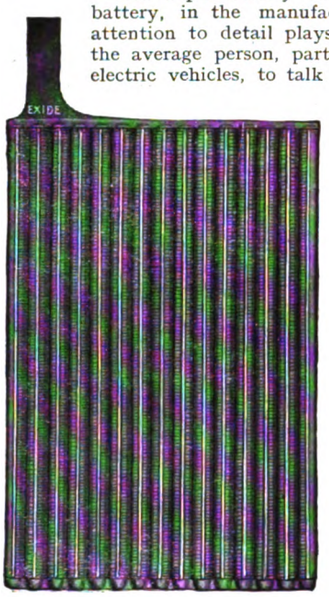


Fig. 1.

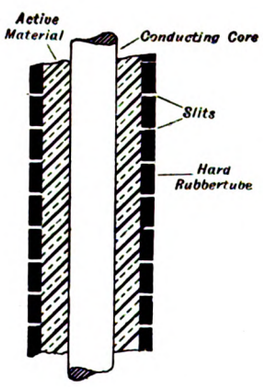


Fig. 2.

to their mind remembrances of flat lead plates, the life of which was never very prolonged, varying largely with the amount of work they were called upon to do, but always requiring at fairly frequent intervals to be taken adrift, and the performance of which was alway somewhat an uncertain quantity.

The "ironclad exide" positive consists of a number of vertical pencils joined top and bottom to a horizontal bar. Each vertical pencil contains a core which is surrounded by the active material, peroxide of lead, which is in turn enclosed by a hard rubber tube having a large number of horizontal slits, as will be seen in Fig. 2. These slits allow the electrolyte access to the active material, and yet are so fine as to practically prevent its washing out.

Each ebonite tube is provided with two vertical ribs projecting on opposite sides at right angles to the face of the plate, which serve

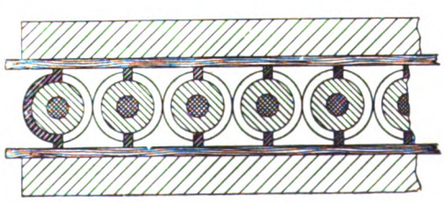
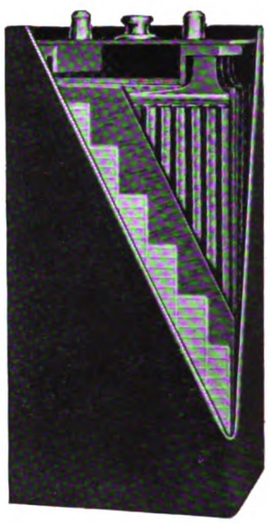


Fig. 3.

not only to stiffen the tubes, but also act as insulating spacers Fig. 1. The cylindrical form of tube is peculiarly well adapted to perform its function, since no amount of expansion or contraction will tend to alter its shape, and the internal strains are thus kept uniform. Another advantage is that most of the electrolyte is carried within the confines of the plate itself, as will be seen in Fig. 3, showing a section of a portion of the positive plate with a separator and negative on each side.

The negative plate is pasted, designed to have approximately the same life as the positive, thus avoiding partial renewals. The life of the "ironclad exide" in actual service is two to three times that of the ordinary flat plate under the same conditions. Its low internal resistance enables it to discharge at very high rates (a valuable characteristic for bad road conditions or hill climbing) and as an example it may be of interest to note that the standard "ironclad exide" battery equipment for a two-ton vehicle which is rated at 45 amperes discharge for five hours, will give 147 amps. for one hour, 490 amps. for ten minutes, or 700 for five minutes, without detriment or any undue drop in voltage. It is also capable of receiving boosting charges at very high rates. The more nearly discharged a battery is the higher charging current it can take, and by starting the charge at a high rate and tapering to a low rate at the end a large proportion of the discharge can be put back in a very short time. Where conditions permit, the constant potential method of about 2·3 volts per cell requires the least attention as the charging current will automatically taper. To illustrate what can be accomplished by constant potential boosts, the following table gives the additional battery capacity obtainable with the battery in different states of discharge.



Ironclad Exide Cell.

	20 min. boost increase per cent.	40 min. boost increase per cent.	1 hour boost increase per cent.
Battery fully discharged ...	22	38	50
Battery three-quarters discharged	19	33	42
Battery one-half discharged ...	15	26	32
Battery one-quarter discharged	10	16	20

In some cases it is more convenient to give a boost at a constant rate of current, and as there is generally a limited time available a convenient rule to determine what rate is safe is as follows:—

$$\text{Charging current (amps.)} = \frac{\text{Amp. hours already discharged}}{1 + \text{hours available for boosting}}$$

This gives the maximum current which can be used for the time specified without reaching the gassing point. It will be noted that the rate of charge with the above formula is dependent only on what has been taken out, and is irrespective of the size of the battery. Nothing could more clearly demonstrate the capability of boosting the "ironclad exide" at high rates.

PROSPECTS IN RUSSIA.

The prospects of trade as between the British motor manufacturing industry and Russia have undergone so many and drastic changes during the past few months that a certain degree of pessimism as to the future is easily explicable. Nevertheless, in a recent issue of *Russia*, a monthly journal published in the interests of Anglo-Russian trade, convincing expression is given to the view that matters eventually will right themselves. In addition, the journal gives a great deal of valuable information, statistical and otherwise, amongst which a brief statement as to tungsten deposits in Russia is of interest in view of the part which this and allied materials is likely to play in connection with the ever increasing use of alloy steels in motor vehicle construction, every possible addition to the world's resources in this direction is of more than ordinary significance and value

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MOTOR TRAFFIC.

MOTOR WAGONS TRANSPORTING MEAT FOR FRENCH ARMY.

Transport of munitions, stores, and food is one of the great problems in the organisation of the present war. Simply from the fact that such enormous numbers of men are in the field the problem is of greater magnitude than in any previous war. How it has been solved, so far as the distribution of meat for the French armies is concerned, is partly described in an interesting article by Mr. W. F. Bradley in the New York *Commercial Vehicle*. Mr. Bradley deals with the equipment and working of motor vehicles (referred to generically in America as motor trucks) in transporting meat from the abattoirs to the troops.

All meat distribution in the French army is carried out by motor trucks which are either former Paris motor omnibuses or the same type of chassis built since the war. Whether they once carried passengers in Paris or have never known anything but war service, the design and construction are the same.

The motor trucks take their supply daily from the army abattoirs and deliver it direct to the company. Years ago it was recognised that only by means of a motor truck fleet could an army in the field be kept supplied with fresh meat under really satisfactory conditions. With horse delivery the cattle have to be kept in close proximity to the army, have to follow their every movement, and be killed while in an unsatisfactory condition. If kept further in the rear, and only slaughtered when in prime condition, the distance is so great that the meat cannot be taken up to the troops at daily intervals. Each motor truck is designed to carry 1,800 kilos, or 3,968 pounds of meat, suspended from hooks on a couple of longitudinal racks. As the meat ration in the French army is 500 grammes per man (1·1 pounds), each truck can carry 3,600 rations. Theoretically one meat truck can carry daily enough meat for a regiment of infantry containing three battalions of 1,000 men, or a total of one vehicle for 3,000 men.

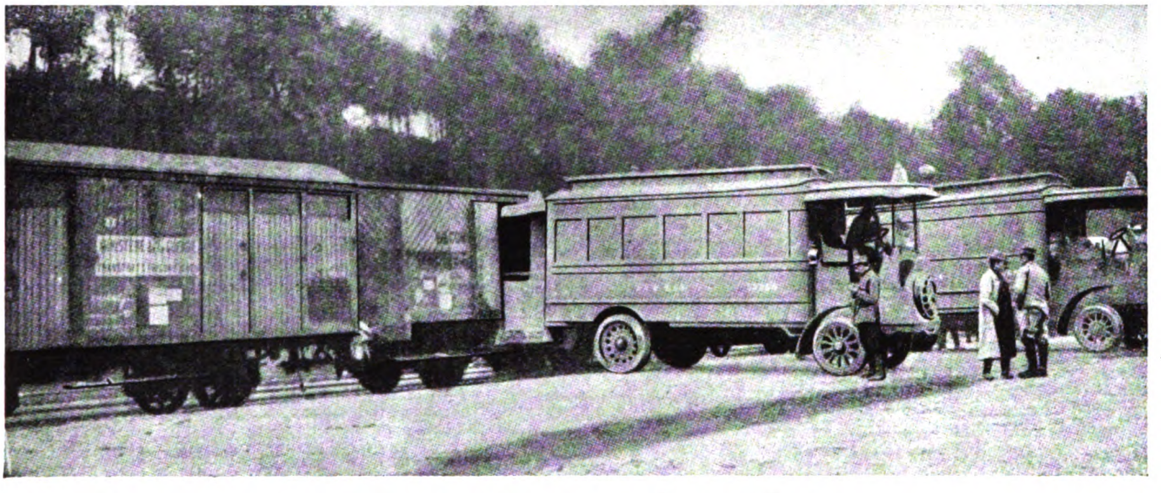
Actual figures taken from the books kept by a meat transport column in service on a portion of the French front showed that seven meat-carrying motor trucks were supplying a division of three regiments, or 16,000 men. This means that one motor truck was furnishing 2,300 men with two meat rations per day. The books showed that these seven motor trucks carried 218 tons of fresh meat in one month, which works out roughly at one ton per motor truck per day, or one pound of meat per day for a little more than 2,000 men.

This is below the theoretical capacity of the motor trucks, which is one vehicle for 3,000 men. The figures are not fictitious, but those taken from the return sheets of a section on the front. The period covered was one of almost complete calm, when numbers of men were away on leave, and in consequence the motor trucks were not working to their full capacity. The same returns showed that during the French offensive on the Somme nine motor trucks supplied 75,000 men, which gives a ratio of one motor truck for 8,330 men, or a load of 8,330 pounds per motor truck per day.

The mileage on this occasion was 50 miles per day per vehicle. Although the service was maintained for some considerable time, this represents the limit of the carrying capacity and mileage of the meat-carrying motor trucks on active service. During the period of calm, when the motor trucks were supplying only 2,000 men per day, the daily mileage was only 15. This indicates that on an average the abattoirs are seven to eight miles behind the company quarters, although, of course, a considerably greater distance separates the abattoirs from the trenches, all food having to be cooked a few miles in the rear and carried to the men on the firing line by hand.

It is usual for a fleet of seven meat-carrying trucks to be attached to each division, which can roughly be considered as 16,000 to 20,000 men. This is a normal service which can be assured month after month, or even year after year, without a hitch. In addition to these seven there are an officer's touring car, used by the lieutenant in charge of the section, a motor cycle for the dispatch rider, and one service or repair truck not equipped with anything more elaborate than a good set of hand tools.

Several meat-carrying sections were visited on the French front during August, 1917, which had been on active service since August, 1914, or three full years. Without an exception these motor trucks were in remarkably good mechanical condition. They were war-stained, and had long lost their original polish under successive coats of army grey, but every mechanical organ was spotlessly clean, and not a single pin or bearing had failed to receive attention and oiling at appropriate intervals. In a large measure the excellent mechanical condition of the automobiles is due to the fact that when these vehicles left Paris in August, 1914, they were in charge of the men who had handled them on the city streets, and these same men had been retained. Every man thus took a personal interest in his truck, and made it a point to keep it out of the repair shops. Details often indicate the general tendency. Thus, these motors are carried under the driver's feet, in which position there is tendency for mud and water to find its way on to the power plant. Every driver had made a housing for his magneto, the protection being of wood, metal, or leather, according to the degree of skill of the driver or the material at his disposal. Every engine was spotlessly clean, carburetter and ignition control connections free from play, there were no oil or water leaks, fan belts were correctly adjusted, and on one corner of the engine base the driver had a small can to hold kerosene for cleaning purposes. The same thoroughness was to be found in the steering and brake connections, all working parts being free from dirt, and obviously oiled or greased every day. These remarks apply to sections which were in regular service, having been on the road the previous day and prepared to go out the following morning. Every month or six weeks, according to military circumstances, each truck is taken off service and turned over to two mechanics for repairs.



Paris Motor Omnibuses in Army Transport Service.

Once a year, on an average each vehicle is sent to its groupement repair shop for a complete overhaul. This mobile repair establishment, being provided with power-driven lathe, milling machine, drill presses, tire press, etc., takes down motor, gear set, and rear axle, examines and repairs all the units, assembles and tests the vehicle. The solid tires are renewed at this operation if necessary. With such a system—individual care on the part of interested drivers, a monthly examination by mechanics, and a yearly overhaul—the life of the motor trucks is lengthened to such an extent that after three years' steady war service over all kinds of roads, and remaining in the open 365 days of the year, the vehicles are, mechanically, as good as new.

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MOTOR TRAFFIC.

Two types of meat-carrying trucks, very similar in general design, are used on the French front. One is a De Dion-Bouton omnibus chassis and the other a Schneider. Cylinder dimensions of the former are 110 by 150 mm., and of the latter 125 by 140 mm. Both have four separate cylinders governed to 1,000 and 900 revolutions per minute respectively, at which speed the road speed is 14 miles per hour. The gear set provides three forward speeds; the final drive is by internal gears. Single and dual solid rubber tires are fitted. All the older vehicles have transformed passenger carrying bodies. All internal fittings have been taken out, and fore-and-aft racks with meat hooks fitted up. Those originally calculated as sufficient proved to be too weak when carrying full load over rough roads, and in consequence had to be strengthened. Windows have been replaced by fine wire gauze screens. These omnibuses have a big rear platform, which has been retained, with the addition of a solid rear door. Without a door, or with gauze panels, the suction at the rear caused too much dust to be drawn into the vehicle, to the detriment of the contents. The rear platform, being lower than the main frame, gives an easy entrance and facilitates loading. It is also made use of to carry reserve gasoline and the drivers' kits.

The body space is 176 inches in length, with a maximum width of 88 inches. Under average weather conditions the fuel consumption is 45 litres per 100 kilometres, which is at the rate of about 5·2 miles to the American gallon. This is practically the same consumption as when operating on the streets of Paris. On city service the fuel used was either benzol or a 50 per cent. mixture of benzol and alcohol. On war service gasoline is employed. In connection with fuel consumption winter service on inferior road surfaces will increase the gasoline consumption 20 to 30 per cent. above the normal for summer duty. This is shown in the records kept for each section on the front.

In addition to the type of meat-carrying motor truck described there are a certain number in use for the necessity of smaller units which cannot be economically supplied by a vehicle carrying nearly 4,000 pounds. These motor trucks are 30 H.P. touring car chassis fitted with twin pneumatic tires and having a special meat-carrying body. The number of these vehicles is comparatively small.

GAS TRACTION.

Restrictions Imposed on Five Districts.

Following upon an order made last month by the Board of Trade, whereby the Board of Trade may at any time, by giving notice in the usual manner, prohibit the use of gas manufactured or supplied by any specific undertaking in motor vehicles "other than those used exclusively by the undertaking itself for business purposes," a notice has been issued specifying the following undertakings to which the order now applies, viz.:—Stockton-on-Tees Corporation, Stockport Corporation, Portsea Island Gas Light Company, Dudley Gas Light Company, and Tottenham District Light, Heat and Power Company. Accordingly, as from March 1, no one may "buy, sell, use, obtain or cause or permit to be bought, sold, used or obtained" for driving motor vehicles any gas manufactured or supplied by these undertakings. Those owners of motor vehicles who hold a gas permit issued before February 9, and who live or carry on business within the area of supply of either of the undertakings mentioned, may apply to the Petrol Control Department for a motor spirit licence in place of the gas permit, which must be surrendered if a licence is granted.

A Stipulation for Municipal Omnibuses.

Some indication of the course that is likely to be pursued in regard to the use of gas as fuel by public passenger conveyances is afforded by a condition imposed by the Board of Trade lately upon York Corporation. The Council had applied for the necessary authority to purchase a motor omnibus, which is required to augment a service run in connection with the tramways undertaking. The necessary consent was given to the proposed expenditure, accompanied by a stipulation that no petrol was to be used in the running. This is equivalent to making the use of gas compulsory.

Motor Gas Equipment Association.

At a meeting of the above association, a discussion took place with regard to the quality and composition of the fabrics from which the flexible containers were being constructed. Various samples were submitted for test by the experts of the association, and it was agreed to adopt certain common points of treatment of the fabric before use by all the manufacturing members. The meeting also assented to an arrangement whereby small samples of all fabric deliveries should be submitted to the testing staff retained by the association, amongst which should be a qualified analytical chemist. It has been decided to register the Motor Gas Equipment Association under trade union regulations.

A MEANS OF SAFETY.

When wind-screens came first to be applied to motor vehicles they were the means of simplifying and of solving many problems, but they brought one or two new ones with them, and incidentally introduced a fresh element of danger. A broken wind-screen carries with it disagreeable and even deadly consequences. Thus, when Triplex safety glass became available as a material of which wind-screens could be made, it was received with gratitude. Reduced to its simplest terms, Triplex consists of two pieces of glass between which is introduced a sheet of transparent xylonite. Adhesion of the layer under very high pressure with transparent cement renders Triplex indistinguishable from ordinary plate glass. It differs therefrom, however, in being practicably unbreakable, and consequently if cracked or shattered by a blow or by gun concussion no particles can become detached, and nobody can be injured by flying pieces of glass, and it remains air and watertight, and is almost as nearly as possible soundproof. It is made in a variety of thicknesses from $\frac{3}{32}$ in. to 3 in. Glass of the latter thickness is used for observation panels of armoured cars, but for motor vehicles those usually employed are $\frac{5}{16}$ in., $\frac{1}{4}$ in., and $\frac{3}{8}$ in. The greater thicknesses are bulletproof, even against direct hits at comparatively short ranges, whilst practically all afford protection against shrapnel. This is of the utmost importance in these times. In certain localities one cannot readily take shelter during air raids when in charge of a motor car, and with a Triplex glass wind-screen and panels some of the risk in continuing to drive in such conditions can be avoided. Triplex can be and has been adapted for an endless variety of purposes—from goggles for airmen and others to scuttle lights and portholes on H.M. ships, and apart from its usefulness, it is entitled to a high place in the list of inventions that have saved life. An interesting booklet "On the Merit of Triplex" has recently been issued by the Triplex Safety Glass Co., Ltd., of 1, Albemarle Street, London, W.1, which will repay examination.

MOTOR DENTAL SURGERIES.

Amongst the many instances of the adaptations of motor transport to services connected with the war, whether on its destructive or other sides, not the least interesting and valuable is that of motor dental surgeries, of which there will shortly be four attached to the British armies in France. Later others will be added, and funds are being raised to present one of these vehicles, of which an example was on view in London recently, for the use of the French army. Although four of these travelling dental clinics amongst something like 5,000,000 men may appear to be very inadequate provision, their extreme mobility adds greatly to their radius of action, and, therefore, to their usefulness. The dental equipment carried is that of a most up-to-date surgery, and electric lighting and heating is provided. The staff comprises two dental surgeons and two mechanicians. The money for these vehicles has been raised by means of what is known as the "Silver Thimble" fund, donors to which give, instead of money, small silver articles which are afterwards sold at auction.

MOTOR VEHICLES FOR MUNICIPALITIES.

Harrogate Council has decided to purchase a 3-ton electric tipping wagon.

Bury St. Edmunds Council has under consideration a proposal to purchase a motor wagon.

Gower Rural Council has under consideration a recommendation for the purchase of a steam wagon.

Penrith Rural Council has decided to purchase a tractor and two trailers at an estimated cost of £935.

Bradford Corporation has under consideration a proposal to purchase a 2½-ton Austin lorry fitted with hydraulic tipping gear.

Marylebone Council has under consideration a proposal to purchase a motor car for the use of the cleansing superintendent.

Llandaff Rural Council has applied for a gas permit for the purpose of running two motor omnibuses to Whitchurch and Cardiff.

Rochdale Corporation has applied to the Local Government Board for sanction to borrow money to purchase three electric wagons.

Derby Corporation has accepted the tender of the General Vehicle Company, Limited, Kingsway, London, for two electric tipping wagons at £2,810.

The Metropolitan Water Board has accepted the tender of Aveling and Porter, Limited, of Rochester, for the supply of two 5-ton rubber-tired tipping wagons.

Swansea Corporation has arranged for a deputation to visit York, Sheffield, Nottingham, and other towns where battery vehicles are in regular municipal service, for the purpose of gaining first-hand information as to the suitability of these machines.

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MOTOR TRAFFIC.

LONDON GENERAL OMNIBUS COMPANY.

REDUCED MILEAGE DUE TO PETROL SHORTAGE.

Mr. J. Cater Scott presided at the annual meeting of the London General Omnibus Company, held on February 22.

The directors' report for the year ended December 31, 1917, showed that the aggregate gross traffic receipts of the five companies who are parties to the common fund agreement from December 21, 1915, including the London Electric Railway, the City and South London Railway, the Central London Railway, the Metropolitan District Railway, and the Omnibus Company, amounted to £5,843,201. The aggregate gross receipts from all sources were £6,661,862. The amount retained by the five companies for revenue liabilities, including working expenses, prior charges, reserve, and other items, was £6,141,526. The balance of £520,336 was credited to the common fund. Under the terms of the agreement, the Omnibus Company is entitled to 32 per cent. of this fund, and accordingly receives £166,507. As the Metropolitan District Railway is under Government control, the total number of passengers carried by the five companies is not given in the report.

The following is a summary of the London General Omnibus Company's receipts and expenditure:—Gross receipts, £3,401,708 5s. 11d.; expenditure, £2,988,209 17s. 11d.; depreciation of leases, plant, machinery, etc., and reserve for contingencies and renewals, £197,938 12s. 9d. Including the balance brought forward and dividends on investments, there is a disposable sum of £330,302 10s. 5d. Deducting interest on debenture stocks, etc., there is a balance of £187,926. The interim dividend paid in July last required £85,359, and a further dividend of 3 per cent, will absorb £64,019, leaving a balance of £38,547 to be carried forward.

In moving the adoption of the report, the Chairman said that no transportation undertaking in London had suffered more severely than this company from war conditions during the past year. The petrol required for their operation was a wholly imported commodity. The quantity used directly by the Government in the mechanical transport and air services was very large, and, with reduced imports, the amount left over for the use of the civil population was strictly limited. The company gave a public service which was essential and which afforded a maximum efficiency in passenger-carrying for each gallon of petrol used. Nevertheless, the Petrol Control Committee had found it necessary to reduce their supplies in such a way that there was a reduction of miles run by their vehicles of 12 per cent. in 1917 below that operated in the previous year. Accompanying this restriction in supply, there was a very heavy increase in the cost not only of petrol, but of everything else they used, and of wages to their staff.

ROAD DETERIORATION AND OMNIBUS MAINTENANCE.

In many districts in London the roads were unavoidably not being maintained with the pre-war degree of efficiency, and this, too, had tended to increase the company's cost of maintenance. The maintenance expenses for the past year had amounted to £981,387. Even with this expenditure, the fleet of omnibuses had not been maintained to its normal standard, and as soon as possible after the termination of the war they must be prepared to replace entirely with new vehicles a considerable portion of the fleet. The reserve for "contingencies and renewals" now amounted to £960,000, or only £78,000 less than the present book value of the entire fleet. They would, therefore, be in a financial position to proceed with the replacements promptly when the circumstances permitted. In August last a general readjustment and increase of fares was put into effect, both on the omnibuses and on certain sections of the railways, and it was probable that further increases might have to be made if expenses continued to increase, but it was not their intention to increase fares beyond the level absolutely necessary to maintain the position of the company. The directors recommended a final dividend, free of tax, of 3 per cent., making a total of 7 per cent. for the year, leaving £38,547 to be carried forward. The company's reserves were in a liquid form, as the cash and Treasury bills in hand amounted to £1,022,936, and, in addition, they owned 5 per cent. War Loan amounting to £319,707, as well as other investments of over £600,000. A little over a year ago a committee known as the London "Safety First" Council was formed, in which the local authorities, as well as the various transport undertakings in the London area were represented. Excellent work had been done during the past year, both by the council and by the company's own campaign, and the effect was shown in a very marked way in the further decrease of accidents.

The report was unanimously adopted, and the retiring directors were re-elected, including Sir Wm. B. Gentle, the chief constable of Brighton.

THOMAS TILLING, LIMITED.

MOST TRYING PERIOD IN THE COMPANY'S 70 YEARS' EXISTENCE.

At the adjourned annual general meeting of Thomas Tilling, Ltd., on February 18, Mr. Richard S. Tilling presided. The directors presented the report relating to the trading for the year 1916. The reasons for the delay were explained in a circular issued in April last year. Owing to the increased cost of labour and materials there is a fall in the net profit to £39,014 from £83,392 in the previous year. The dividend on ordinary shares is reduced from 12 to 10 per cent., and the extra interest on income debenture stock from 1⅝ to 1¼ per cent. The amount carried forward is £28,464, being about £7,000 less than in the preceding twelve months.

The Chairman said that this meeting had been delayed owing to the delay in arranging with the authorities as to how the accounts were to be treated with respect to taxation. The period under review was the year 1916, now ancient history. They were no longer merely jobmasters, but they were now road transport contractors. They had altered the method of rendering their accounts. The gross turnover was no longer given, although during the year 1916 it was the highest on record, but the balance remaining after payment of all expenses had been given. One Folkestone part of the business had been merged into the East Kent Road Car Company, so that they only got the profits resulting from its operation, the turnover being transferred from their accounts to that of the car company. There was also the Tilling-Stevens Company of Maidstone, the turnover of which was very large, but only the dividends on the capital invested had come into their accounts, and to compare the volume of the present turnover with the past might therefore be misleading. To a large extent they were now a holding company, having seats on the board of each subsidiary company.

Reference was made in the report, continued the Chairman, to their acquisition of the rolling stock, etc., of the Brighton, Hove, and Preston United Omnibus Company. This acquisition enabled them to cater for the whole of the local omnibuses in the Brighton and Hove areas, and had led to economy, as the omnibuses which they were working in the district were now used to greater advantage, and all repairs were carried out in Brighton instead of London. A great many new vehicles had been added to the Brighton fleet, and the rolling stock as a whole had been greatly improved. The traffic needs of the district were not yet fully covered, but they hoped to remedy this when the restrictions on fuel and labour were removed. They had merged their local chars-a-banc business into the Southdown Motor Company, on the board of which they were represented, but this properly belonged to the accounts for 1917, when the arrangements matured. Owing to the war their business had been conducted under very trying conditions. They did not buy and sell to meet contracts ahead. They were always on the heels of a rising market, and in making a contract three months in advance the prices increased far beyond their anticipations before the period expired, and in the passenger-carrying part of the business, they could not raise their fares until the fact of their expenses having risen and their having lost money compelled them to do so. It was gratifying to the directors to see the number of original holders who still retained their holdings, and it must be gratifying to the shareholders to see how the business had adapted itself to the ever-changing conditions. During the 70 odd years they had had good times and bad times.

The reports and accounts were adopted, and a further dividend of 4⅜ per cent. on the ordinary shares for the year 1916, making 10 per cent. less tax for the year, and thus entitling income debenture stock holders to additional interest for that year of 1¼ per cent., was ratified.

CORPORATION OMNIBUS ACCOUNTS.

Sheffield Tramways Committee's motor omnibus estimates for the year ending March 25 next show a net balance of £5,885, and for the year ending March 25, 1919, it is estimated that there will be a net balance of £2,701.

The accounts of the motor omnibus department of Birmingham Corporation Tramways for the year ended March 31 last show a total revenue of £62,558. The receipts from omnibuses run for munition workers were £12,323. The total traffic receipts were £49,914. The expenditure was £52,472, leaving a balance of over £10,000 for transference to profit and loss account. The expenditure on petrol was £13,844; and on repairs and maintenance, £14,839; while the traffic expenses totalled £20,598.

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MOTOR TRAFFIC.

MOTOR TRAFFIC NOTES.

No Restrictions upon Electric Vehicles.—In answer to a question asked in the House of Commons, Mr. Wardle (Parliamentary Secretary of the Board of Trade) said there was no intention to issue any regulations restricting the use of electricity in motor vehicles.

Loans for Road Improvements.—The Treasury has agreed that new grants or loans up to an amount of £200,000 may be made out of the surplus now standing to the credit of the Road Improvement Fund, on the understanding that the expenditure of money so obtained shall be confined to surface repairs.

Private Hire Cars on Coal Gas.—Replying to a question in the House of Commons, Sir A. Stanley stated that the use of private hire motor cars driven by means of gas was not prohibited, but was restricted to necessary purposes only. It was not possible to allow the use of hire cars, whether driven by means of gas or petrol, for pleasure purposes. Owners of hire cars fitted with gas apparatus ordered prior to December 21, when the notice of intention to restrict the use of gas in motor vehicles was announced, would be granted permits on application to run these vehicles for the purposes authorised by the Order.

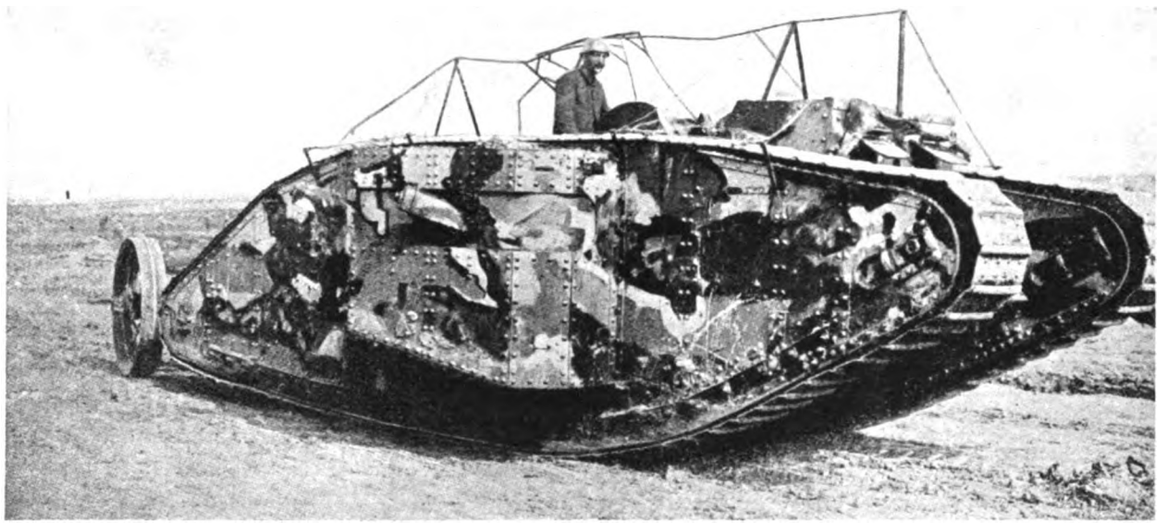
Cost of Operating Taxi-cabs.—As from February 20 the British Motor Cab Company, Limited, the largest of taxi-cab companies operating in the metropolis, discontinued business. This was five days later than the date specified in an announcement issued by the Company to the effect that unless the Home Secretary could see his way to authorise an increase of fare from 8d. to 1s. per mile they could not carry on business at a profit, and would therefore have no alternative but to close. The facts and figures of the company's position were duly considered by the Home Secretary, but his decision was against granting the increase.

A Notable Record.—A Prince Henry Vauxhall car, equipped with Dunlop tires, with Mr. Boyd Edkins at the wheel, ran recently from Brisbane to Sydney in 26 hours 3 minutes. This performance breaks more than one record, and for the first time three highly-prized inter-state road records are held by this particular combination of car and tires, viz., Melbourne-Sydney, Brisbane-Sydney, and Melbourne-Adelaide. In each case the car record was better than the fastest express train, whilst the time actually taken by three Vauxhall cars on the 1,796 miles from Brisbane to Adelaide was 57 hours 52 minutes, an average of 30 miles an hour.

Motor Omnibuses for Tokio.—With a capital of half-a-million sterling—says a recent issue of the *Board of Trade Journal*—it is proposed to form a company to operate a fleet of omnibuses within the city limits of Tokio. The routes on which it is eventually intended to run number 22, comprising in all about 88 miles. This scheme, which has been projected for some time past, is only likely to be carried out gradually. For a start only a modicum will probably be attempted, operations being commenced with from 25 to 50 machines, in order to see whether the undertaking will pay. At present, it is stated, the demand for motor transport in the city is not great.

Transport of Foodstuffs.—In a recent announcement the Food Controller draws the attention of firms engaged in wholesale food distribution to the adoption by the Ministry of Munitions of the general principle that applications for permits for motor vehicles to replace existing ones can only be granted where it can be proved that the use of a motor vehicle for the purpose contemplated is essential in the national interest. It must also be shown that no second-hand vehicle can be obtained. In view of these circumstances and the increasing difficulty of obtaining spare parts, the Food Controller urges that delivery of food by motor vehicles shall be kept within the closest possible limits, and that all avoidable wear and tear be avoided.

When Army Drivers Offend.—The position of a driver of an army vehicle who finds himself summoned in respect of road offences is less enviable than that of the ordinary citizen in a similar plight. The military driver must not only face the magistrates, but he has to undergo the ordeal of a court of inquiry as well. As a rule this takes place before the police court proceedings, and it finds the man either to blame or not to blame, as the case may be. Invariably, if the decision at the military inquiry is against him, that of the police court will be likewise, but, unfortunately, this does not always apply when a military court acquits him. Several cases have been known where the civil court has convicted in spite of the fact that the military authorities have come to the conclusion that no offence had been committed.



A Camouflaged Tank.

London Motor Transport Volunteers.—At the celebration of the second anniversary of the London Motor Transport Volunteers, the commanding officer (Major C. R. Freemantle), in a speech relating how the corps came to be formed, said that in the early days of the war men on leave arriving in London after midnight were compelled to tramp to their destinations through the darkened streets. He therefore appealed for public assistance to organise a free motor transport service, but various difficulties caused the service to be discontinued after a few weeks. Later, however, through the efforts of Sir J. Lister Kaye—now the president of the corps—the scheme was revived, with the approval of the general officer commanding the London district. At first, in February, 1916, the work was carried on by means of hired omnibuses, but in December of that year the authorities asked for the service to be extended, and it was decided to buy a number of lorries. In 1916 they carried men by the hundreds; now they were being transported by thousands, the weekly average being between 10,000 and 15,000. The total strength of the corps is now 520 men and 433 vehicles, and it has provided means of conveyance across London for nearly 700,000 men.

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THE

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

COUNTY BOROUGH OF BOLTON.

Tramways Department.

The Tramways Committee of the Bolton Corporation invite Tenders for the following Materials and Stores for the year ending March 31st, 1919:—

Overheard Materials.
Gear and Pinion Wheels.
Iron Castings and Malleable Iron Castings.
Motor and Axle Grease.
Waste and Sponge Cloths.
Lamps, Carbons, Insulating Materials, etc.

Forms and Specifications of tender may be obtained on application to Mr. J. Barnard, Tramways General Manager, Bolton, on and after Monday next, March 11th, 1918.

Sealed tenders on forms provided, endorsed "———— Contract," to be addressed to the Chairman of the Tramways Committee, Tramways Office, Bolton, and to be delivered not later than 12.0 noon on Monday, March 18th, 1918.

The Committee do not bind themselves to accept the lowest or any tender.

SAMUEL PARKER,
Town Clerk.

Town Hall, Bolton.
March 6th, 1918.

COUNTY BOROUGH OF DARLINGTON.

The Electricity Committee of the Darlington Corporation are prepared to receive Tenders for—

Water Tube Boiler.
Economiser.
Cooling Tower.
Motor Driven Induced Draught Fan.
Steam Turbo Feed Pump.

Specifications and forms of tender may be had on application to the Borough Electrical Engineer, Electricity Works, Haughton Road, Darlington.

Sealed tenders, endorsed "Tender for Electrical Plant," to be delivered to the undersigned not later than the 29th inst.

H. G. STEAVENSON,
Town Clerk.

Town Clerk's Office,
Darlington.
March 11, 1918.

CARDIFF CORPORATION.

Uniform Clothing.

The Cardiff Corporation invite Tenders for the Supply of Uniform Clothing for Tramway Inspectors, Drivers and Conductors (Male or Female).

Full particulars and Form of Tenders may be obtained from the Engineer and Manager, at his Office, The Hayes, Cardiff, where also Sample Garments may be inspected.

Tenders to be endorsed "Uniforms," and addressed to the undersigned on or before March 26, 1918.

J. L. WHEATLEY,
Town Clerk,
Cardiff.

CITY OF MANCHESTER.

The Electricity Committee of the Manchester Corporation are prepared to receive Tenders for the Supply, Delivery, and Erection at their Moss Side Sub-Station of—

Three 3,000 k.v.a., 33,000 volts, 3-phase Static Transformers.

Specifications and Form of Tender may be had on application to Mr. F. E. Hughes, Secretary, Electricity Department, Town Hall, Manchester.

Further particulars and information can be obtained on application to Mr. S. L. Pearce, Chief Engineer and Manager, Dickinson Street, Manchester.

Tenders, duly endorsed and addressed to the Chairman of the Electricity Committee, must be delivered at the Town Hall, not later than 10 a.m., on Tuesday, the 2nd April proximo.

The firm entrusted with this work will be required to enter into a Contract to be prepared by the undersigned.

The Corporation do not bind themselves to accept the lowest or any tender.

THOMAS HUDSON,
Town Clerk.

Town Hall, Manchester.
March 11th, 1918.

POSITIONS VACANT.

SHIFT ENGINEER.

Wanted, Shift Engineer, with experience in modern 3-phase turbo-generators and boiler-house plant, to obtain and maintain economical results. Hours 56 per week. Salary from £170 per annum, inclusive of all bonuses, etc., up to date of appointment.

Applications, setting out full particulars of experience and copies of testimonials, and when duties could be commenced, to be sent to S. T. ALLEN, Chief Engineer and Manager, Electricity Works, Wolverhampton.

JUNIOR SHIFT ENGINEER.

To take charge of combined traction and lighting plant. Alternating-current experience essential.

Salary £130 per annum.

Applications, stating age and experience, to be addressed immediately to the BOROUGH ELECTRICAL ENGINEER, Electricity Works, Dover.

ARMATURE WINDER.

Armature Winder wanted for tramway repair work, Dick, Kerr and Westinghouse motors. Permanency to suitable man, who must be ineligible for H. M. Forces, and no person already employed on Government work will be engaged. Inclusive rate 1s. 3½d. per hour with standard overtime rate. Apply, stating age and experience, with copies of testimonials, to General Manager, Corporation Tramways, Coventry.

Wanted.—Copies of the TRAMWAY AND RAILWAY WORLD, Volume XXXIX, No. 1 (January 1, 1916), to complete files for binding.—Reply to Box, 24, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

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SATURDAY, MARCH 16, 1918.

THE COMING INCREASE IN FARES.

THE award to tramway employees of the Committee on Production was published on Saturday last, and it is given in this issue. It decrees in effect that a number of tramways now working at a loss shall largely increase their rate of wages, and that by the same action many other undertakings now making a small profit shall be transferred to the list of unprofitable businesses. In the circumstances the only course to be taken is to press the Government with the least possible delay to authorise an increase in the statutory maximum fares. The Tramways (Board of Trade) Committee has already acquainted the Board of Trade with the condition of the industry, and there is little doubt that when proof has been adduced of the necessity for a general increase in fares the Board will without delay present to Parliament a Bill giving them powers to deal with the matter. All tramway authorities should at once lay the facts in their own case before the Tramways Committee, so that no time may be lost in convincing the Board of Trade of the urgency of the matter. With the strong case that the facts will substantiate, there should not be difficulty in securing the assent of Parliament to the proposed Bill. Both tramway owners and the men's union fully recognise the fact that fares must be increased if many undertakings are not to stop working. At a conference of tramway employers and representatives of the unions on March 7 a resolution was passed asking Sir George Askwith to obtain from the Government an undertaking that they would take immediate steps to authorise an increase in maximum tolls and charges, whether statutory or otherwise, which may be demanded on all tramways and light railways to an amount to be directed by the Board of Trade. This resolution was signed on behalf of the Municipal Tramways Association by Mr. J. B. Hamilton, of the Tramways and Light Railways Association by Mr. R. J. Howley, and of the National Transport Federation by Mr. R. Williams. The signatories thus include all organisations competent to speak for the industry, and with such support the Government is clearly justified in taking such measures as will restore it to self-supporting conditions. While railway fares have been increased 50 per cent. since the outbreak of war, tramway fares have on many systems remained unchanged, and in no case have the increases been important. In the meantime wages and the cost of materials have increased steadily, and with the latest addition to wages it is clearly impossible for employers to carry on at the present fares. The question whether the increase is reasonable or not is now of no practical importance. It has been granted by Government, and must be given by the employers, whether they regard it as just or unjust. But the public cannot expect ratepayers or owners to shoulder the new burden ; nor do we think tramway passengers would desire them to do so. The opposition that seems to be anticipated in certain quarters will quickly disappear when the true facts of the matter are understood. It should be the business of tramway authorities to put these facts before all concerned with the least possible delay.

TRAMWAY EMPLOYEES' WAGES.

AWARD OF THE COMMITTEE ON PRODUCTION.

The award of the Committee on Production in the arbitration between tramway employers and the tramway and omnibus workers was published on Saturday last, although its terms were announced late on the Friday evening. The demands for the workers were granted almost in full, and no undertaking was given on their part that fresh demands would not shortly be made.

The terms of the award are as follow :—

The parties to this reference are (1) the National Transport Workers' Federation and (2) the Municipal Tramways Association, the Tramways and Light Railways Association, and the London General Omnibus Company, Limited.

The claim submitted was or £1 per week over pre-war rates to both males and females aged 18 and upwards (youths and girls under 18 to have half the amount given to adults), with proportionate increases for overtime, the increase to become operative on the first paying in January for the week previous to that pay day, and the method of payment to be the same as is now in operation in the various undertakings in so far as the payment of a war wage is concerned.

The decision of the Committee is that there shall be paid to the men concerned aged 18 and over, and to the grades of women aged 18 and over whose terms of employment include the undertaking that they shall be paid the same rates as the grades of men whose places they have filled, such an advance as shall give £1 per week over pre-war rates to the grades concerned, payment to be made on the basis of a week of six days or six shifts.

In the case of women aged 18 and over not included in above award, the advances now being made shall be increased by 4s. per week, subject to a maximum of 20s. a week over pre-war rates of the grades concerned.

In the case of girls and boys and youths under 18 years of age the advances now being paid shall be increased by such an amount per week as shall give the girls, boys and youths under 18 years of age in the undertakings concerned half the additional advances given by this award to the men or women, as the case may be, of the same undertaking.

The advances hereby awarded shall come into force as from the beginning of the pay period for which payment is made on the pay day in the week commencing March 1, 1918, and shall be taken into account in the calculation of payment for overtime and Sunday work where extra payment is made for such work.

All existing bonuses shall be taken into account in the calculation of payment for overtime and Sunday work.

The advances are to be regarded as war wages and recognised as due to and dependent upon the existence of the abnormal conditions now prevailing in consequence of the war.

The methods of payments of the advances given by this award shall be the same as are now in operation in the various undertakings in so far as the payment of war wage is concerned.

This award shall apply only to women to whom the provisions of the Orders made by the Minister of Munitions under the powers conferred upon him by the Munitions of War (Amendment) Act, 1916, do not apply.

Mr. Robert Williams, who represented the Transport Workers' Federation in the arbitration, has stated that he regarded the result as eminently satisfactory in that it is of national scope for the first time in an industry without any national organisation. Though only one omnibus company was specified in the award, it must be read to apply to all omnibus undertakings in the country. He trusted that no company not directly represented would attempt to take advantage of the non-inclusion of their name. The award

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was fair, as it provided an equalised war wage increase between men and women. The only note of regret was that in those districts where employees have been constrained to accept diversity between men and women, the women are to be further penalised by having their further increase under the award limited to 4s.

EFFECT OF THE AWARD IN SEVERAL TOWNS.

Sir John Courtis, chairman of the Cardiff Corporation Tramways Committee, said that the award would entail an addition to the wages bill of £6,000 per annum. It was a question how long the tramways were going to keep off the rates. The people who would feel the effect of the increased rates were not the working men—they were better off than they ever were—but the middle salaried class, who were seriously suffering.

At Glasgow the male employees had already received a bonus equivalent to the demand, but the women's claims have not yet been settled. At present over 2,000 women are employed by the tramways.

In Leeds the bonus already paid is 15s. per week for men, and 12s. per week for women. Before the war, drivers were paid at the rate of 7½d. an hour, and conductors 5½d. an hour, and the average working week was sixty hours. The approximate wages will now be: Drivers, £2 17s. 6d. a week; women conductors £2 3s. 6d. The number of employees affected is 1,400.

At Liverpool the male employees were recently given a bonus of 16s. a week; they will consequently receive 4s. a week more. In the case of the highest grade drivers this will bring their weekly wages up to £3 7s. To the women the increase will vary from 9s. to 20s. weekly. An estimate of the working expenses of the department for the current year shows an advance of £130,000, which will more than swallow up the profits available in each of the past two years in relief of the rates. Either the rates must go up or the fares must be increased.

The award will affect some 4,000 men and women employees in Manchester and Salford. The cost to the Manchester Corporation is estimated at about £53,000 a year. Alderman Bowes, chairman of the Manchester Tramways Committee, recently gave the following figures showing what the tramway undertaking pays and expects to pay in special advances in wages, war bonuses, and allowances to dependents of workers who are serving with the forces:—Bonus and war advances now being paid, £134,780; 12½ per cent. advance, £5,282; further bonus applications, £37,034; approximate cost of net increase, £94,583. This amounted to a total of £271,679, he said, and the war allowances to dependants, £56,000, raised the total to £327,679. These figures referred to about four thousand employees.

Mr. R. H. Swain, chairman of the Nottingham Corporation Tramways Committee, has stated that the award will cost Nottingham Corporation £11,000 a year. Since the outbreak of war the male employees have received in bonuses an aggregate of 14s. 4d. per week.

At Wallasey, as an effect of the award, the male employees will receive another 8s. weekly, and the women an advance of 4s. per week. The total extra charge on the undertaking will amount to approximately £5,000 a year, or about 2½d. in the £1 on the rates.

The Bristol Tramways and Carriage Company have already increased the wages of drivers to over 20s. above pre-war rates. With regard to women employees, there would be certain small changes, which had been effected.

THE MUNICIPAL TRAMWAYS ASSOCIATION.

The Bradford City Council having asked for the release of Mr. C. J. Spencer, general manager of the Bradford Corporation Tramways, from his duties with the Shipyard Labour Department of the Admiralty, in order that he may return to his duties as general manager of the tramways, Mr. Spencer has been released by the Admiralty and returns to Bradford to take up his duties on Monday, the 18th instant.

Mr. A. R. Fearnley, the present honorary secretary of the Municipal Tramways Association, having previously asked to be relieved of the duties of the office, Mr. Spencer has been asked by the Executive Council to resume his position as honorary secretary of the Association which he relinquished upon joining the Admiralty, and he has agreed again to take up the position.

All communications should therefore from this date be addressed to Mr. Spencer, Corporation Tramways Department, Hall Ings, Bradford.

DEPUTATION ON TRAMWAY FARES.

The President of the Board of Trade will shortly receive a deputation from tramway authorities with regard to the revision of tramway fares. The object of the deputation is to ask the Government to consent to a general increase in tramway fares in order to meet the great increase in wages. The appointment of this deputation follows on a resolution passed at a conference of tramway employers and unions on March 7, that Sir George Askwith be asked to obtain from the Government an undertaking that they would take immediate steps to authorise an increase of the maximum tolls and charges, whether statutory or otherwise, which may be demanded on all tramways and light railways to an amount to be decided by the Board of Trade. The resolution was signed on behalf of the Municipal Tramways Association by Mr. J. B. Hamilton; on behalf of the Tramways and Light Railways Association by Mr. R. J. Howley; and on behalf of the National Transport Federation by Mr. R. Williams

MISCELLANEOUS NEWS AND NOTES.

Southport's Concession to Wounded.—The Tramways Committee of the Southport Corporation have made a recommendation to the effect that wounded soldiers shall be permitted to use the cars at half fares.

Proposed Increased Fares in Liverpool.—The Liverpool City Council having decided to ask the Tramways Committee to prepare a scheme for the revision of fares, the latter again considered the subject last week. It was decided to deal with it at a special meeting.

Leeds Parcels Scheme.—Rapid progress is being made with the arrangements for the tramway parcels-carrying scheme which it was recently decided to institute. The necessary adaptations of rolling stock are practically complete, and the new parcels depot is ready for occupation.

Temporary Curtailment at Ipswich.—Owing to a power-station breakdown it will be necessary during the next two or three weeks to curtail to a somewhat considerable extent the services on the Ipswich Corporation Tramways. There will be no closing of routes, but the number of cars in operation will be much reduced.

Sunday Services at Southport.—Southport Tramways Committee have recommended the Council to run the tramway cars on Sunday. Hitherto there has been no Sunday service on the Corporation tramways, but only on the lines of the Southport and Birkdale Company, which were recently acquired by the Southport Corporation. The ratepayers have twice given a substantial majority against Sunday services.

Newport Tramways Permanent Way.—At last week's meeting of the borough Electricity and Tramways Committee it was reported that Newport was one of the twelve great towns where the tramway permanent way is in the best state of repair. Representatives of the Board of Trade Tramways Committee have lately inspected the system, with a view to the transfer elsewhere of track and equipment on unessential routes.

Parcels Service at Nottingham.—At a recent meeting of the Town Council it was reported that arrangements were being made with the Food Control sub-Committee for the carrying of parcels and merchandise, and it was hoped that a scheme would shortly be put into operation to carry parcels in bulk on the cars. The Tramways Committee had already had several interviews and now awaited the organisers' acceptance of their suggestions, which included the establishment of certain receiving depots, and also the distribution of parcels from those centres.

Farthing Fares at Southport.—On Friday of last week the ordinary penny fares on the Southport Corporation Tramways were increased to 1½d. This experiment is certainly an interesting one, but it can hardly be anticipated that its result will be such as to encourage its adoption elsewhere. As an instance of the difficulties to which it leads, it is stated that on the first day of the new scale 9,408 farthings were issued to the conductors in four-shilling packets for the purpose of change.

Southampton Tramways.—The Tramways Committee have decided to make a contribution to the rates of at least £8,000. Some members of the Committee were in favour of a larger appropriation to the rates, but in view of the fact that in the next few months the expenditure on rolling stock is estimated at £3,000, Alderman Dunsford, chairman of the Committee, took the view that it would be better to make provision at once for this abnormal expenditure. The tramways have had a remarkably good year, and the contribution to the rates forms a record.

Proposed Extension of West Hartlepool Tramways.—At a recent meeting of West Hartlepool Town Council, the town clerk and the borough engineer presented a report with reference to an interview with the Tees Conservancy Commissioners as regards the provision necessary for traffic likely to arise over the new road in course of construction. It was resolved that application should be made to carry the tramways or light railways from the borough of Seaton Carew to Port Clarence, on the ground that the claims of West Hartlepool were superior geographically to those of any other authority.

Facilities for Aircraft Workers.—Mr. Kellaway, replying to a question by Mr. Anderson in the House of Commons on March 14, said that the subject of adequate travelling facilities for certain aviation workers had for some time been engaging the attention of the transport department of the Ministry of Munitions. They had succeeded in obtaining additional omnibuses and tramcars, but owing to the shortage of drivers it had not yet been possible to do more. The question was still receiving the special consideration of the tramway company concerned and of the Tramways (Board of Trade) Committee. In regard to railway facilities, in spite of engineering difficulties a halt was at present under construction and nearing completion.

Spencer Moulton "Super-mileage Tyres."—Solid rubber tyre users in the West of England, also in Wales, and some of the adjoining counties, will be pleased to note that arrangements have been made for prompt attention to their requirements by Messrs. Geo. Spencer, Moulton and Co. (Head Office, Solid Tyre Department, 239, Deansgate, Manchester), who have arranged that Messrs. Haslem and Stretton, Ltd., of 11, Windsor Place, Cardiff, and Bristol Bridge, Bristol, shall have the sole agency for their "super-mileage" solid rubber tyres in the counties of Glamorganshire, Monmouthshire, Hereford, Gloucestershire, Dorsetshire, Somersetshire, Devon and Cornwall; whilst Messrs. Tom Norton and Co., Ltd., of Llandrindod Wells, have taken up the sole agency for the whole of Wales with the exception of the County of Glamorganshire.

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Derby Services to be Improved.—For some time past, owing to shortage of staff and other difficulties arising out of the war, the services on the Derby Corporation Tramways have been curtailed. This has necessarily been of great inconvenience to the public, and the reduced schedule has been carried out only with the greatest possible difficulty. At the last meeting of the Town Council, however, it was announced that, from next week, the full service will be restored at the busy parts of the day. In spite of the curtailment and numerous stoppages, it was stated that the monthly return showed an increase in traffic receipts of 24 per cent., as compared with the corresponding period of last year.

Nottingham Tramway Services.—Mr. R. H. Swain, chairman of the Nottingham Corporation Tramways Committee, alluding at the dinner of the Nottingham Rotary Club to some local criticism of the tramway services, said he was afraid the public lost sight of the fact that the cars were carrying between 250,000 and 300,000 more passengers a week than was the case a year ago, and that in spite of enormous difficulties due to war time conditions. Over 600 men had joined the colours or had been liberated for war service. As regards women conductors, Mr. Swain said that he knew there were grounds for complaint in some cases; in fact, 132 women were dismissed last year for neglect of duty, but he thought that, all things considered they had done remarkebly well.

Birmingham Tramway Men's Demands.—Employees of the Birmingham Corporation Tramways Department have made a demand for the 12½ per cent. bonus to be awarded to them. They have already received increases of wages amounting to 19s. 6d. on pre-war rates, and thus their position is not materially altered by the settlement of last week. At a meeting of Birmingham employees, attended by nearly 700 men and women on Sunday last, a resolution was passed to tender seven days' notice to cease work at midnight on Saturday. On Tuesday, however, a conference took place between the employees' representatives and the Corporation Tramways Committee, and after discussion at a meeting of the latter, and also by the Salaries Wages and Labour Committee, it was decided to make a joint application to the Committee on Production on behalf of the Corporation and the Tramwaymen's Unions, for an award upon this question within ten days. Thus the notices are for the time being in abeyance. Operatives in the gas and water departments have already been awarded the bonus of 12½ per cent.

PERSONAL.

Mr. H. D. Munro, electrical engineer of Exeter, has been granted an increase in salary from £475 to £550 a year.

Mr. C. R. Everson, tramways manager of Plymouth Corporation, has been continued in his appointment at a salary of £600 per annum.

Mr. C. W. Charlesworth has been appointed commercial secretary to the Wolverhampton electricity undertaking, at a salary of £300 per annum.

Mr. G. Roddy, traffic manager of the Rhondda tramways, has been appointed divisional inspector for South Wales and Monmouthshire under the Ministry of Food.

Mr. J. W. Spark, acting tramways manager of West Hartlepool Corporation, has been granted a further sum of one hundred guineas for his services during the year ended March 31.

Lieut. R. L. Acland has been gazetted Major commanding the Derbyshire Motor Volunteer Corps. Major Acland is borough electrical engineer and tramways manager of Chesterfield.

Mr. E. R. Turton, M.P., Upsall Castle, Thirsk, a director of the North Eastern Railway Company since 1902, has been elected chairman of the Railway Clearing House, in succession to Mr. H. W. L. Harford.

Mr. C. H. Wordingham, M.I.C.E., superintending electrical engineer to the Admiralty, will in future be known as Director of Electrical Engineering, and his department will be entirely separate and self-contained.

Mr. R. C. Harpur, mains superintendent, has been appointed electrical engineer at Dover at a salary of £300 a year and a house. Mr. Smith has been appointed chief assistant electrical engineer, at a salary of £275 a year.

Mr. G. H. Hume, who is so widely known for his valuable work in connection with the London County Council Tramways, as chairman of the Highways Committee, has been elected as leader of the Municipal Reform majority of the Council.

Mr. P. J. McKellen, who has been appointed H. M. Trade Commissioner at Singapore, is expected to leave this country during next week. Firms desirous of communicating with him should address their letters to H. M. Trade Commissioner, Singapore, Straits Settlements.

Mr. Albert Mackrill, chief clerk with Mr. J. Wilkinson, electrical engineer of Hull tramways, is leaving Hull after fifteen years' service to take up an appointment at Stoke-on-Trent as commercial manager to the Borough Electrical Engineer. Mr. Mackrill has been presented by the employees with a portion of a silver dinner service and also with a silver serviette ring for his little daughter. Mr. Wilkinson, who made the presentation, referred to the conscientious way in which Mr. Mackrill had performed his duties, which was not always an easy matter for a public servant. He had shown tact and judgment, and sympathy with dependents of the men who had gone to the front. As a personal token of appreciation of fifteen years' service, Mr. Wilkinson has presented Mr. Mackrill with a gold English lever watch.

FINANCIAL REPORTS AND MEETINGS.

Hadfields, Ltd.—The directors recommend a further dividend on the ordinary shares of 4s. per share, together with a bonus of 1s. per share, making 6s. for the year, free of income tax.

W. T. Glover and Co., Ltd.—A dividend has been declared on the ordinary shares for 1917 at the rate of 5 per cent. and a bonus of 2½ per cent. After placing £20,000 to reserve, £10,770 has been carried forward, subject to excess profits duty.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended March 13 amounted to £55,493, an increase of £10,348, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to March 13 (forty-nine and a half weeks) the total receipts were £2,724,529, an increase of £385,805 on the corresponding period of 1917.

D. Napier and Son, Ltd.—The report of the directors for the year ended September 30, 1917, states that the profit, after allowing for depreciation of premises, plant and tools, amounted to £120,400, and including the balance brought forward from last year of £9,557, there is a gross balance of £130,056. Dividend on the preference shares and interest on debentures requires £28,000; income tax, £6,944; directors and trustees' fees and commission to managers £4,123; dividend of 10 per cent., less income tax, on the ordinary shares paid on January 4, 1918, £35,000; leaving a balance of £64,988. Out of this sum the directors recommend the payment of a bonus of 1s. 6d. per share on the ordinary shares free of income tax, amounting to £26,250, and an allocation to the general reserve of a further £20,000 (making £60,000) leaving a balance of £18,738 to be carried forward. The Company has been engaged entirely upon important Government work and during the year ended September 30 last its output exceeded that of any previous year. Present contracts in hand will necessitate a further considerable outlay on plant, and to meet the Government demands for an increased output, additional premises are being erected and should shortly be completed.

Callender's Cable and Construction Co., Ltd.—The Directors have had under consideration the desirability of bringing the nominal issued capital of the Company more into accord with the actual funds invested in the business. Owing to the prudent policy adopted for many years past a surplus has been accumulated, apart from the reserve, which exceeds the total issued ordinary share capital of the Company. It is therefore proposed, subject to the approval of the shareholders, and to the necessary powers being obtained, that there shall be issued to the Ordinary Shareholders a new ordinary share in addition to each share held. At the same time it is also proposed to subdivide the shares, both preference and ordinary, which are of the denomination of £5 each, into shares of £1 each. In order to carry this scheme into effect, it will be necessary to increase the authorised share capital, and powers will be asked to raise this from £500,000 to £700,000. After providing for the distribution above mentioned, there will remain unissued £150,000 in share capital. It will be necessary to obtain the consent of His Majesty's Treasury; when that has been received a meeting of shareholders will be called to carry the scheme into effect.

CONTRACTS AND ORDERS.

The Cleansing and Sewage Committee of Bolton Corporation propose to purchase an electric motor wagon.

Plymouth Town Council propose to apply again to the Board of Trade for sanction to borrow £8,600 for eight new cars. The Corporation sinking fund is to provide the money.

Newport Electricity and Tramways Committee have recommended the acceptance of the tender of Messrs. Fraser and Chalmers for a 3,750 kw. turbo-alternator the alternator, to be supplied by the General Electrical Company.

DICK, KERR & Co.,
Limited,
ABCHURCH YARD, CANNON STREET, LONDON, E.C.,
ENGINEERS & CONTRACTORS.
Complete Equipment
TRAMWAYS & LIGHT RAILWAYS
at home and abroad

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash Mar. 14 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	68½	68
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4¾	55/-	56/3
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4¾	46/10½	46/10½
4%	4%	Do. 4% Deb.	100	91	66	66
4½%	4½%	Do. 4½% Deb.	100	98½	67½	68
5%	5%	Do. 5% Deb.	100	96	66	67
—	—	Associated Omnibus Co., Ord. ..	5/-		1/2	1/2
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88	88
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	103	103
—	1/-	Bath Electric Trams Pref. Ord.	1	¾	3/4½	3/4½
6d.	6d.	Do. 5% Cum. Pref. ..	1	¾	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	20½	20½
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11½	9½	9½
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	44	44½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	90	90
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5½	5½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91	91
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	27	26
6%	5%	Do. Pref. Ord.	100	106	32	33
5%	5%	Do. 5% Cum. Pref. ..	100	103	51½	53
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	85	85
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	59½	60½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	31½	32½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	75	74
5%	5%	Do. 5% Deb.	100	92	78½	78½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	70	72½
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	£6/16/6	£6/16/6
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1	¼	12/-	12/-
1/3	1/3	City of B. A. Trams	5	5½	80/-	80/7½
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	85
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	82½	82½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7½	7½
6/-	6/-	Do. 6% Pref.	10	12	10	10
—	—	Hastings & Dis. Elec. Tram Ord.	10/-		1/1	1/1
1/2*	1/2*	Do. 6% Cum. Pref. ..	1		10/1½	10/1½
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
1/1½	5d.	Hong Kong Tramway	5/-		17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. .	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	¾	2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co. ..	10	10½	10	10
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79½
9½d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
--	1½d.	London & Sub. Traction Ord. ..	1		1/9	1/8
6d.	6d.	Do. 5% Pref.	1		5/6	5/-
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	61½	60
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80½	80½
5%	5%	Do. 5% Inc. Deb.	100	88½	76½	76
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	44	45½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5½	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	86	86
7½d.%*	9d.*	Manaos Trams & Ltg. Ord. ..	1		3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	71	71
$1½	$1½	Manila Elec. R. R. & Light .	$100	102	75½	75½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70½	70½
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	26½	26
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	36½	36½
—	—	Do. 6% Mt. Bds. ..	100	76	25½	25½
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	88½	88½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2*	National Steam Car	1		16/3	16/4½
9d.*	9d.*	New General Traction	1	¾	7/3	7/3
8d.	6d.	Northern Gen. Trans. Ord. ..	1		12/9½	12/9½
6/-*	3/-	Para Elec. Rlys. Ord.	5	4½	78/9	78/9
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	7/6	7/1½
—	—	Do. 7% Non. Cm. Part Pf.	1	—	14/-	13/9
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1		6/8½	6/8½
6d.	6d.	Do. 5% Pref.	1		12/-	12/-
8d.	1/4	Provincial Trams. Ord. ..	1		18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	86½	87
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	75½	74½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86½	86½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	72	72½
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/6½	4/7½
4%	4%	Son. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	91½	91½
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77½	77½
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	32/6	32/6
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	66	66
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	¾	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	¾	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	76½	76½
—	—	Metropolitan Dist. Ord. ..	100	21½	14½	14½
—	—	Undgd. Elec. Rys. of London ..	10	21½	32/6	31/1½
		Do. "A"	1/-	¾	5/1½	5/1½
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	103½	103½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	99½	99½
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	79½	80½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

Names.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C.	Mar. 5	388	434	+ 46	48	21,767	+ 2,429
Aberdeen Corporation ..	,, 6	1,773	2,220	+ 447	40	86,938	+ 11,219
Ayr Corporation ..	,, 9	249	315	+ 66	43	19,496	+ 2,580
Belfast City	,, 8	5,516	7,124	+ 1,608	49	326,743	+ 48,881
Birkenhead Corporation ..	,, 10	1,486	1,885	+ 399	49½	90,855	+ 15,444
Birmingham Corporation ..	,, 2	16,460	20,399	+ 3,939	48	898,530	+ 133,904
do. Motor Omnibuses ..	,, 2	869	1,181	+ 312	48	51,792	+ 5,206
Blackburn Corporation ..	,, 6	960	1,571	+ 611	45½	67,531	+ 11,857
Bournemouth Corporation	,, 13	1,623	2,572	+ 939	49½	125,448	+ 15,646
Bradford Corporation ..	,, 9	5,632	7,003	+ 1,371	49	373,619	+ 45,307
Burnley Corporation ..	,, 9	1,442	1,995	+ 553	..	..	..
Burton-on-Trent Cor. ..	,, 10	262	367	+ 105	49	16,011	+ 2,412
Bury Corporation ..	,, 10	1,252	1,666	+ 414	49½	80,393	+ 11,177
Chatham & District ..	,, 7	1,106	1,161	+ 55	10	10,641	+ 345
Cork Electric	,, 7	437	563	+ 126	10	5,334	+ 1,002
Derby Corporation ..	,, 9	973	1,218	+ 245	49	70,912	+ 5,439
Dublin United	,, 1	5,941	7,305	+ 1,364	9	61,814	+ 11,088
Dundee City	,, 6	1,285	1,547	+ 262	42½	66,031	+ 7,670
East Ham Corporation ..	,, 9	1,152	1,262	+ 110	49	66,703	+ 4,590
Exeter Corporation ..	,, 8	277	344	+ 67	49	19,356	+ 144
Glasgow Corporation ..	,, 9	23,288	26,794	+ 3,506	40½	1,066,120	+ 119,892
Glossop (U.E. Sup. Co.) ..	,, 9	115	172	+ 57	10	1,763	+ 521
Halifax Corporation ..	,, 5	1,799	2,124	+ 325	48½	117,196	+ 12,315
do. Motor Buses ..	,, 5	43	51	+ 8	48½	2,394	+ 11
Hastings and District ..	,, 11	649	1,050	+ 401	10	9,428	+ 596
Huddersfield Corporation	,, 9	2,457	3,102	+ 645	49	156,872	+ 19,909
Ilford U.D. Council ..	,, 9	597	800	+ 203	49	37,494	+ 5,075
Ipswich Corporation ..	,, 9	358	598	+ 240	49	32,397	+ 8,374
Isle of Thanet	,, 9	219	167	— 52	28	3,916	— 1,762
Kilmarnock Corporation ..	,, 9	159	216	+ 57	42½	8,807	+ 1,962
Lanarkshire	,, 7	2,365	3,243	+ 878	10	29,030	+ 6,107
Lancashire United	,, 6	1,741	2,522	+ 781	10	23,270	+ 7,263
Leeds City	,, 9	8,802	10,930	+ 2,128	49	541,015	+ 64,408
Leicester Corporation ..	,, 10	3,108	4,114	+ 1,006	..	..	..
Leyton U.D. Council ..	,, 7	1,540	1,693	+ 153	49	90,939	+ 12,563
Liverpool Corporation ..	,, 2	14,296	16,890	+ 2,594	8½	143,646	+ 21,834
Llandudno & Colwyn Bay	,, 1	186	256	+ 70	13	3,020	+ 610
London County Council ..	,, 13	45,055	55,403	+ 10,348	49½	2,724,529	+ 385,805
Maidstone Corporation ..	,, 7	177	226	+ 49	49	11,994	+ 1,666
Manchester Corporation ..	,, 9	17,363	23,041	+ 5,678	49	1,041,643	+ 130,482
Nelson Corporation ..	,, 9	174	231	+ 57	49	11,625	+ 1,344
Newcastle-on-Tyne Cor. ..	,, 9	6,667	8,400	+ 1,733	49	389,940	+ 60,373
New St. Helens & Dist. ..	,, 6	1,015	1,287	+ 272	36	49,816	+ 11,732
Northampton Cor.	,, 8	646	853	+ 207	49	41,586	+ 6,528
Nottingham Corporation ..	,, 7	3,655	4,650	+ 995	49	220,749	+ 31,266
Oldham Corporation ..	,, 10	2,199	2,950	+ 751	50	141,816	+ 21,401
Portsmouth Corporation ..	,, 10	2,035	2,581	+ 546	..	..	..
Provincial	Jan. 26	1,750	2,479	+ 729	16½	39,274	+ 5,569
Reading Corporation ..	Feb. 28	841	1,146	+ 305	48	51,137	+ 10,172
Rhondda Tramways ..	,, 28	1,350	1,606	+ 256	9	12,918	+ 2,113
Rotherham Corporation	Mar. 6	1,569	1,901	+ 332	49½	89,468	+ 13,389
Sheffield Corporation ..	,, 10	10,452	13,008	+ 2,556	50	610,632	+ 81,183
Southampton Cor.	,, 6	1,554	2,209	+ 655	47½	101,638	+ 20,869
Southend-on-Sea Cor. ..	,, 6	615	640	+ 25	49	42,185	— 642
South Shields Cor.	,, 2	794	1,054	+ 260	48	46,621	+ 6,371
Sunderland Corporation.	,, 10	1,554	2,039	+ 485	49	91,866	+ 11,158
Sunderland District ..	Feb. 27	619	872	+ 253	17	13,737	+ 3,114
Swindon Corporation	Mar. 6	205	268	+ 63	48½	13,340	+ 3,345
Torquay Tramways .	Feb. 28	489	683	+ 194	9	5,525	+ 1,715
Tyneside Trys. & Trmrds.	,, 27	645	897	+ 251	9	6,759	+ 1,671
Wallasey Corporation .	Mar. 9	1,112	1,437	+ 325	49½	76,361	+ 10,758
Walsall Corporation ..	,, 9	734	1,099	+ 365	49	49,464	+ 9,482
Walthamstow U.D. Coun.	,, 9	928	1,110	+ 182	49	59,420	+ 7,469
Warrington Corporation	,, 7	491	736	+ 245	49	29,774	+ 5,331
West Ham Corporation	,, 7	3,081	3,614	+ 533	48½	177,920	+ 22,983
Wigan Corporation ..	Feb. 28	1,591	2,136	+ 545	49	100,495	+ 18,145
Yorkshire (West Riding)	Mar. 10	1,737	2,287	+ 550	10	23,407	+ 5,631

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool & Fleetwood, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

Name.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Mar. 11	£52,595	£57,977	10	£538,059	+ £85,156
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Dec. 30	3,981	4,127	40	32,971	+ 360
Brazilian Traction (Mlrs.)	Dec.	7,312,000	8,069,000	52	92,200,000	+ 7,815,000
Brisbane	Feb.	29,800	32,009	8	66,569	+ 3,689
British Columbia .. $	Dec.	496,959	555,555	26	2,923,660	+ 258,275
Buenos Aires Lacroze ..	Feb.	35,977	34,307	34	303,775	— 1,239
Burmah Tram. & Light Rs.	Jan.	23,802	25,429	26	161,251	+ 144
Calcutta .. .. Rs.	Mar. 9	60,477	67,174	10	707,628	+ 27,985
Cape Town	Jan.	18,440	19,707	..	..	..
Carthagena and Herrerias	Feb.	3,223	4,031	9	8,042	+ 837
Cordoba	Nov.	12,836	13,339	34	108,715	— 2,127
East India	Feb.	1,570	1,318	30	8,767	— 5,826
Hong Kong .. .. $	Jan. 12	11,760	11,365	2	23,611	— 337
Kalgoorlie	Nov.	2,555	2,041	47	29,564	+ 1,026
La Plata	Jan.	4,315	4,711	4	4,711	+ 396
Lima	Jan.	36,841	43,536	4	43,536	+ 6,695
Lisbon .. .. Escu	Oct.	203,955	240,406	..	..	..
Madras (2 weeks) Rs.	Feb. 15	38,622	37,363	26	115,641	+ 10,215
Manaos	Nov.	142,858	146,047	..	..	..
Manila .. .. $	June	59,432	73,900	..	..	..
Montevideo	Feb.	32,304	34,573	17	135,674	+ 10,261
Pernambuco	Mar. 3	3,887	4,347	9	41,976	+ 9,704
Peruvian .. .. $	Feb.	844,770	925,410	34	8,263,030	+ 917,638
Port Elizabeth	Jan.	4,498	4,779	..	..	..
Rangoon	Feb.	4,605	5,662	8	11,023	+ 1,785
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Jan 5	13,105	13,119	1	13,119	+ 14
Toronto .. .. $	Nov.	911,529	1,052,000	47	10,986,998	+ 1,161,954
Winnipeg .. .. $	Nov.	282,899	305,881	47	3,039,397	+ 16,227

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THE

Tramway & Railway World

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

COUNTY BOROUGH OF DARLINGTON.

The Electricity Committee of the Darlington Corporation are prepared to receive Tenders for—

Water Tube Boiler.
Economiser.
Cooling Tower.
Motor Driven Induced Draught Fan.
Steam Turbo Feed Pump.

Specifications and forms of tender may be had on application to the Borough Electrical Engineer, Electricity Works, Haughton Road, Darlington.

Sealed tenders, endorsed "Tender for Electrical Plant," to be delivered to the undersigned not later than the 29th inst.

H. G. STEAVENSON,
Town Clerk.

Town Clerk's Office,
Darlington.
March 11, 1918.

CARDIFF CORPORATION.

Uniform Clothing.

The Cardiff Corporation invite Tenders for the Supply of Uniform Clothing for Tramway Inspectors, Drivers and Conductors (Male or Female).

Full particulars and Form of Tenders may be obtained from the Engineer and Manager, at his Office, The Hayes, Cardiff, where also Sample Garments may be inspected.

Tenders to be endorsed "Uniforms," and addressed to the undersigned on or before March 26, 1918.

J. L. WHEATLEY,
Town Clerk,
Cardiff.

CITY OF MANCHESTER.

The Electricity Committee of the Manchester Corporation are prepared to receive Tenders for the Supply, Delivery, and Erection at their Moss Side Sub-Station of—

Three 3,000 k.v.a., 33,000 volts, 3-phase Static Transformers.

Specifications and Form of Tender may be had on application to Mr. F. E. Hughes, Secretary, Electricity Department, Town Hall, Manchester.

Further particulars and information can be obtained on application to Mr. S. L. Pearce, Chief Engineer and Manager, Dickinson Street, Manchester.

Tenders, duly endorsed and addressed to the Chairman of the Electricity Committee, must be delivered at the Town Hall, not later than 10 a.m., on Tuesday, the 2nd April proximo.

The firm entrusted with this work will be required to enter into a Contract to be prepared by the undersigned.

The Corporation do not bind themselves to accept the lowest or any tender.

THOMAS HUDSON,
Town Clerk.

Town Hall, Manchester.
March 11th, 1918.

CITY OF ABERDEEN.

The Electricity Committee of the Aberdeen Corporation are prepared to receive Tenders for the supply, delivery and erection at their electricity works of :—

One 5000-KW. Turbo-Alternator,
Surface Condenser and Auxiliaries.

Specification and Form of Tender may be had on application to the undersigned. Tenders, duly endorsed and addressed to the ENGINEER, to be delivered not later than noon, on TUESDAY, the 9th proximo.

The Corporation do not bind themselves to accept the lowest or any tender.

J. ALEX. BELL.

Electricity Works,
Millburn Street, Aberdeen.

POSITIONS VACANT.

LONDON COUNTY COUNCIL.

Appointment of Operation Superintendent in Tramways Department.

Applications are invited for the position of Operation Superintendent in the Traffic Branch, at a salary varying from £600 to £800, according to qualifications.

Age not to exceed 50 years. Applications must be on the official form, which specifies the conditions upon which the appointment will be held and the principal duties of the position. The form may be obtained from the Clerk to the Council, County Hall, Spring Gardens, S.W.1, and must be received at the County Hall not later than 1 p.m. on 15th April, 1918. An addressed foolscap envelope, bearing 1d. stamp, must be sent with the request for the form of application.

JAMES BIRD,
Clerk of the London County Council.

ARMATURE WINDER.

Armature Winder wanted for tramway repair work, Dick, Kerr and Westinghouse motors. Permanency to suitable man, who must be ineligible for H. M. Forces, and no person already employed on Government work will be engaged. Inclusive rate 1s. 3½d. per hour with standard overtime rate. Apply, stating age and experience, with copies of testimonials, to General Manager, Corporation Tramways, Coventry.

CHARGE ENGINEER.

Charge Engineer wanted for combined A.C. and D.C. station.—Apply, stating experience, with copies of testimonials and salary required, to BOROUGH ELECTRICAL ENGINEER,
Electricity Works, Dover.

SWITCHBOARD ATTENDANT.

Switchboard Attendant wanted for combined A.C. and D.C. station.—Apply, stating experience, age and wages required, to the Burgh Electrical Engineer, Blackhall, Paisley.

Electric Tramcar Handbook
FOR
MOTORMEN, INSPECTORS,
AND DEPOT WORKERS.
By W. A. AGNEW.
120 Pages, 7 ins. by 4½ ins. Cloth. Price, *1s. 6d.* Postage, *2d.*
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OVERHEAD LINE MATERIALS AND SUPPLIES.

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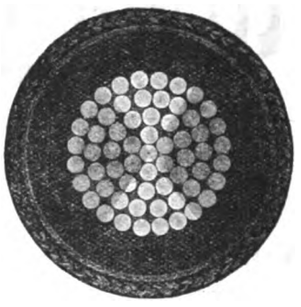
Telegrams: "Controllers, Leeds." Telephone: 3488 Leeds.

160, WOODHOUSE LANE, LEEDS.

1837.  1918.

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THE
Tramway AND Railway World

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SATURDAY, MARCH 23, 1918.

THE BRADFORD STRIKE AND ITS SEQUEL.

ONE of the unsatisfactory features of the recent award of the Committee on Production was that, in spite of a general understanding that its terms would be fully accepted by both parties, it left still "in the air" some further questions known to be immediately pending. Chief amongst these is that of the 12½ per cent. additional bonus to certain classes of employees, and upon this issue more than one dispute affecting tramways is awaiting the committee's decision. When these are settled, others no doubt will arise. Indeed, as the war goes on and the purchasing power of the pound sterling decreases, demands for further advances in wages must be regarded as more or less inevitable. Therefore, as things are, there is no finality in these matters, and the task of those who are responsible for the operation of tramways, whether publicly or privately owned, tends to become almost intolerably onerous. It has to be remembered that wages and employees are only one of the many sources of difficulty and complication in these abnormal times. Pessimism is rightly to be deplored, but it is not pessimism to face facts, and in facing the facts as they have lately presented themselves it would be idle to pretend that the prospect confronting tramway managements has been in any sense a hopeful one. The last few days, however, have brought slight but palpable indications of improvement—at all events, so far as labour is concerned. This has arisen in unexpected circumstances, derived from a strike at Bradford, which, on the face of it, appears to have been a somewhat wanton and unnecessary affair. The causes of this dispute are easily explained. They were concerned with a question of the interpretation of the recent award in so far as it affected women employees. Its terms have not appeared to anyone as being ambiguous. Roughly speaking, they were that in those cases where women employees have consistently been treated on the same basis with regard to wages as men, they received equally with men the £1 per week advance on pre-war scales, but where this was not the case the additional bonus was to be 4s. above that received at the time of the award. It was specifically undertaken that the terms of this award would be loyally accepted, but Bradford employees refused to abide by this undertaking. The women, in spite of the fact that their original terms of service did not include those of equal treatment with men, claimed to receive the full £1 per week advance. In this they were supported by the male employees, and the corporation, not being disposed to give way to a demand which was a clear breach of the arrangement, arrived at only a week before, offered to refer the question to the Committee on Production for interpretation. This offer was not accepted, and a strike of both men and women tramway workers was declared. By the intervention of the Ministry of Munitions, it was settled after lasting four days on the basis of the acceptance of the corporation's offer at the outset. The significant feature of this settlement is contained in the agreement then made, the terms of which are given elsewhere in this issue. Upon whose initiative this arrangement was made does not appear, but it certainly represents a notable step in the right direction. It provides that "both parties will use their best endeavours to prevent a repetition of the present unfortunate strike, and for that purpose will meet in conference if, and when, any dispute or difference affecting the tramways department arises," and thus follows essentially on the lines of the Whitley Report, without necessarily adopting its machinery in detail. The details, however, do not greatly matter; the importance of the agreement lies in its effects and possible achievements. The plan proposed, it is true, is not without certain objections that readily suggest themselves, but as to how far these may materialise depends upon the manner in which the agreement is worked. Subject to that consideration, however, it affords a lead in a course that other tramway authorities are already considering, which, if generally adopted, may relieve both tramway undertakings, and the public as a whole from much anxiety and needless trouble. Thus the Bradford strike may, after all, prove to have served a capitally useful purpose.

INCREASE IN TRAMWAY FARES.

At a meeting of the Leeds Tramways Committee on March 18, under the chairmanship of Alderman R. A. Smithson, the recent award of the Committee on Production was discussed, and it was subsequently intimated that an advance in tramway fares would probably soon be made. In view of the recent advance in war wages and the increased cost of materials, the Tramways Committee have asked the general manager, Mr. J. B. Hamilton, to prepare an estimate of the result of the year's working under the new conditions.

The Tramways Committees of Birmingham, at a meeting on March 19, under the chairmanship of Councillor Harrison Barrow, reported that no reply had then been received to the joint application by the Corporation and the employees to the Committee on Production to issue thair award with respect to the bonus. While the recent award of the Committee on Production granted the 12½ per cent. to the men in some of the tramway departments, consideration of the claims of the drivers, conductresses, and other employees of the traffic staff was reserved. This led to a dispute and a threatened strike, and the Committee on Production were asked to issue their award within ten days. This period expires on Saturday. Whatever be the result of this application, the concessions already granted press heavily upon the Tramways Committee, and must lead to a revision of the fares and stages so as to recoup the department for the increased expenditure. By Statute the Corporation are compelled to run a stage of two miles for a penny, and the Committee are asking the Board of Trade for power to reduce that limit. If permission is granted the Committee will at once ask the Council to sanction shorter stages, and that, of course, will mean increased fares and additional income.

At Hull it has not been decided whether fares will be increased in consequence of the award to the employees. The discussion of the matter has been delayed until the year's balance sheet is

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completed. It is estimated that the Committee will require £8,000 a year in addition to cover the expenses entailed by the award.

Councillor J. Timpson, chairman of Portsmouth Tramways Committee, at a recent meeting of the Town Council, said that the Tramways Committee felt it their duty to accept the terms of the award of the Committee on Production. It meant that they would have to give their male tramway employees a war allowance of £1 a week above their pre-war wages. Female conductors would benefit to the extent of 4s. per week above what they received at the present time. Although as a result of the current year's work the Tramways Committee might be able to hand over a substantial amount to the rates, the chance of their being able to do so next. year was remote. With an addition of £28,000 to their pre-war wages sheet, it would be impracticable for them to assist the rates. It was possible that fares would have to be raised, sections shortened, or cheap tickets abolished.

L.C.C. TRAMWAY MATTERS.

At the fortnightly meeting of the London County Council on Tuesday, it was agreed, on the recommendation of the Highways Committee, that a special temporary allowance at the rate of £50 a year should be made to each of seven salaried officers, viz., the five charge shift engineers at Greenwhich power station, and the two sub-station superintendents.

It was reported that a request had been received from employees in the traffic branch of the tramways department for the following alterations in their conditions of labour: (*a*) that the present wages be increased to 100 per cent. above pre-war rates, (*b*)that the hours of labour be reduced to 8 a day or shift, 48 hours a week and (*c*) that any spread-over time in excess of 10 hours a day or shift be paid for at the rate of time and a half; and from employees in the breakdown gangs that (*a*) a war wage be paid of £1 a week to all, (*b*) overtime rate be paid for first two hours at rate of time and a quarter, and time and a half afterwards and double time for Sundays, (*c*) a flat rate be paid of £2 a week plus war wages, (*d*) charge hands should be paid from 45s. to 52s. a week. These applications were referred to the Traffic Conciliation Board.

The Highways Committee reported that they had passed a vote of thanks to their Chairman, Mr. G. H. Hume, and to their vice-chairman, Mr. A. H. Scott, for their services during the past year.

The following have been appointed members of the Highways Committee for the ensuing year:—

Sir John Benn,	H. H. Gordon,	Lt.-Col. Morrison Bell,
D. Davies,	F. C. Harrison,	W. A. Nicholls,
J. M. Gatti,	D. Hazel,	A. H. Scott,
W. H. P. Gibson,	G. H. Hume,	W. J. Squires,
G. M. Gillett,	William Hunt,	Henry Ward,
Alfred O. Goodrich,	Henry Marks.	

The Chairman (Mr. R. C. Norman) announced that the D.C.M. for gallantry and distinguished service in the field had been awarded to Sergt. P. Knightley, R.F.A., a motor man in the Tramways Department, and he had conveyed the congratulations of the Council to him.

Mr. J. D. Gilbert, M.P. asked whether the recent arbitration decision giving £1 per week extra to tramway workers applied to L.C.C. employees, men and women; from what date would the increase apply and when would it be paid to the employees?

Mr. Hume, in reply, said the Council was not a party to the arbitration resulting in the award by the Committee on Production. The question of increasing the rate of wages of the traffic branch of the tramways department would be before the Traffic Conciliation Board on Wednesday, when notice would of course be taken of the award in question. Under the award, the advance on war wages came into force as from the beginning of the pay period for which payment is made on the pay day in the week commencing March 4, 1918. As regards the second part of the question, that was a matter for the Conciliation Board. All reports were adopted.

STRIKE AT BRADFORD.

On Saturday the Corporation tramway services at Bradford were suspended in consequence of a strike of both men and women employees, although the subject of dispute concerned only the latter. The women claimed equal treatment with the men in regard to wages, and the men supported this demand. It was really a question of the proper interpretation of the recent general award by the Committee on Production as affecting women. The Corporation expressed their willingness to go to the Committee jointly with the men's representatives on the basis of a resumption of work in the meantime. To this, however, the employees would not agree. No difficulty was raised by the Corporation as to conceding the 4s. advance which the recent award provides in the cases of women whose contract of service does not include an undertaking of equal treatment to that accorded to the men whom they have replaced. The position appears to be that the women claimed this equality now, although it had not been hitherto conceded either in Bradford or in many neighbouring towns, where, with the 4s. additional, women will still receive smaller war bonuses than the men. In Leicester, however, equal treatment has always prevailed; there, and in other towns where a like policy had been followed, the conditions of the award clearly laid down the £1 per week advance on pre-war rates for both men and women employees alike. It was contended, therefore, that the action of the Bradford Corporation employees constituted a breach of the undertaking that had been given that the award would be loyally observed.

The strike, occurring as it did last Saturday and continuing throughout Monday and Tuesday, occasioned very serious inconvenience, and this was aggravated by the entire inability of the railways with their present depleted resources to afford the slightest relief. Meetings and conferences were held during Sunday and Monday, but no agreement was arrived at until Tuesday, when a representative of the Leeds Department of the Ministry of Munitions came to Bradford, and addressed the employees in the afternoon. As a result of a lengthy meeting, and after receipt of telegrams from Mr. Robert Williams (general secretary of the Transport Workers' Federation) and Sir George Askwith guaranteeing an immediate hearing by the Committee on Production, the employees returned to work on Wednesday.

Later there was a conference between representatives of the employees and a special Corporation Executive Committee in which the following important agreement was concluded: "It is agreed between the representatives of the Tramways Committee and the representatives of the tramways employees that both parties will use their best endeavours to prevent a repetition of the present unfortunate strike; and for the purpose will meet in conference if and when any difference or dispute affecting the tramways department arises; and will take any other steps which will tend to an amicable settlement of any such difference or dispute, it being the wish of both parties that such difference or dispute shall be settled in a constitutional manner."

This, dated March 19, was signed by Alderman Enoch Priestley, chairman of the Tramways Committee, and by Mr. Herbert Kershaw, president of the Bradford branch of the Amalgamated Association of Tramway and Vehicle Workers, on behalf of the employees.

DISCHARGED SOLDIERS AS TRAMCAR DRIVERS.

Colonel Ashley, in the House of Commons on March 18, asked the Home Secretary the reason for withholding certificates to discharged soldiers under the age of 21 who desired to obtain employment as tramcar drivers on the Metropolitan tramway systems; and whether he would take steps to provide that the period during which the police took up the references of a prospective tramcar driver was considerably reduced.

Mr. Brace (Under Secretary):—The age of 21 years was fixed on the advice of the Cab Committee in 1894, and the Commissioner of Police, who is the licensing authority, is precluded from granting a licence to any person below that age. The Home Secretary is prepared, however, as a war measure, to modify the Order and to allow applications from discharged soldiers of the age of 20 who are physically fit for the work. Every effort is made to expedite the inquiries and to see that no avoidable delay occurs.

Colonel Ashley: Could not my hon, friend lower the age to 19, and, in view of the fact that these men are considered fit to have the Parliamentary vote at the age of 19, why cannot they at that age drive tramcars?

Mr. Brace: I will consult the Home Secretary on that point.

Colonel Sir H. Greenwood: Is the hon. gentleman aware that large numbers of these men have been driving lorries in France and on the other fronts and are therefore well qualified to drive tramcars? Is he also aware that the law which now precludes them was passed in 1894, before there were any motor-driven vehicles?

Mr. Brace: I will consult the Home Secretary on that point also.

On Thursday the Home Secretary announced that he would reduce the age to 19.

DICK-KERR TURBINE FOR GLASGOW.

An important contract for generating plant has recently been awarded to Messrs. Dick, Kerr & Co., Ltd., by the Glasgow Corporation in connection with the new power station which is being erected by the city authorities at Dalmarnock. The contract includes a turbo alternator set, with condensing plant and step-up transformers designed for a continuous output of 18,750 k.w. The turbine will be a single unit standard Dick-Kerr impulse type machine, arranged to run at 1500 r.p.m. and will operate on steam at 250 lbs. per square inch pressure at the stop valve, superheated to 650 deg. Fahr., and exhaust into a vacuum of 29·1 in. All overloads will be dealt with by automatic governor valves without recourse to hand operation or by-pass valves, high pressures and temperatures being confined to the cast steel governor valves and inlet castings.

The turbine will be direct coupled to a 6500 volt, 25 cycle, 3 phase Dick-Kerr alternator, having a maximum continuous rating of 24,000 k.v.a. at 80 per cent. power factor. The machine will be of the self ventilating type, provided with fans on the rotor drawing the cooling air through a wet air filter of the Heenan & Froude type. An exciter of the overhung type will be provided. The alternator will be electrically connected to a bank of three Westinghouse single phase oil circulated water cooled transformers, stepping up the pressure from 6,500 to 20,000 volts. In connection with these transformers, a separate oil cooler and motor driven oil circulating pumps will be provided.

The turbine will exhaust into a standard Willans & Robinson condenser, having a surface of 26,000 square feet. The air extraction plant in duplicate will be on the well-known Willans rotary water jet system which possesses the merit of great simplicity and ease in operation, combined with great evacuation power. The vacuum will be 29·1 in. with a 30-in. bar. The extraction pumps, also in duplicate, will be of the usual centrifugal type.

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WOMEN DRIVERS IN SCOTLAND.

A somewhat erroneous impression seems to prevail with regard to the number of women now employed as drivers in Scotland. We have been favoured by Major Fred Coutts, honorary secretary of the Scottish section of the Advisory Committee, Tramways (Board of Trade) Committee, with the return made up to date showing the numbers of women employed as drivers and conducters on all Scottish undertakings. The percentage of female drivers is 18·6 and of female conductors, 13.

Name of Undertaking.	Drivers.		Conductors.	
	Men.	Women.	Men.	Women.
Aberdeen Corporation.	100	6	10	111
Aberdeen Suburban.	6	4	—	10
Ayr.	5	16	1	20
Broughty Ferry.	14	—	4	11
Coatbridge.	4	9	—	20
Dumbarton.	15	3	—	25
Dundee.	95	—	—	105
Dunfermline.	21	—	—	31
Edinburgh.	254	—	73	244
Falkirk.	7	11	—	18
Glasgow.	1276	230	253	1435
Greenock.	17	36	1	54
Kilmarnock.	10	8	—	20
Kirkcaldy.	23	—	3	24
Lanark.	17	104	—	165
Leith.	32	21	10	52
Musselburgh.	6	9	—	16
Paisley	59	—	—	77
Perth.	15	—	15	—
Rothesay.	2	1	—	3
Stirling.	4	—	—	4
Wemyss.	16	—	—	18
	1998	458	370	2463

MISCELLANEOUS NEWS AND NOTES.

Messrs. Hays, Hunter and Standen, of London and Wolverhampton, manufacturers of "Don" brake lining and other specialities, have removed their head office to 71, Southwark Street, London, S.E.1.

The General Vehicle Company, Ltd., whose offices have been required by the Ministry of Munitions, Aircraft Production Department, has secured temporary premises at 4, Southampton Row, W.C.1.

Improved Car Loading at Leeds.—About Easter new arrangements will come into force at Leeds for loading the cars, which it is hoped will reduce the crowding that now takes place in the centre of the city. There will be an alteration in some of the existing stopping places and gangways will be provided at certain points so that passengers may enter the cars in an orderly manner.

Bristol Tramway Men with the Forces.—In their report for the past year the directors state that the staff was further depleted during the year for military service, but the public services have been maintained to the fullest possible extent with the labour available. Since the outbreak of war 1,929 employees have joined His Majesty's Forces. The total weekly allowance paid to families and dependants of employees on active service during the year amounted to £13,742.

Presentation to Courageous Ex-Driver.—For his pluck and resource in stopping a runaway tramcar, on which, owing to fusing, a fire had started, a young man named Harry Parkin, at one time a a driver in the employ of the Notts and Derbyshire Tramways Co., Ltd., was presented at Heanor last week with the certificate of the Carnegie Hero Fund and a War Bond Certificate for £5. The driver had jumped off the car with a view to getting on the rear platform in order to switch off the current, but the car, gathering speed, he was unable to do this.

Collision at Glasgow.—A collision between two Glasgow Corporation tramway cars occurred in the evening of March 16 at St. Vincent's, Place. A woman was driving a car going westward and failed to notice that the points leading to a siding were against her. The car consequently ran into the siding and collided with a stationary car, throwing the latter off the rails. The only occupants of the stationary car were the driver and conductor, both women, who were slightly injured. In the colliding car there were nine passengers, eight of whom complained of shock.

A British Trade Development in Spain.—Replying to a question in the House of Commons by Sir J. D. Rees on March 18, Sir Albert Stanley, President of the Board of Trade, said:—I understand that an agreement has been concluded between Messrs. Babcock and Wilcox and certain Spanish interests for the creation of a large constructional company in Spain, and that one of the terms of the agreement is that the company should purchase in the United Kingdom all imported materials, plant, etc., provided that equal conditions of quality and price are obtainable. I regard this condition as one of great importance to British trade, and trust that other firms who may make contracts for industrial enterprise overseas may see their way to securing the insertion in such agreements of similar provisions.

London "Safety First" Council.—During the month of February 38 entries for the Practical Suggestions Competition were submitted. The First Prize of One Guinea, with a First Class Diploma, has been awarded to Mr. R. S. Prinsep, 56, Victoria Street, S.W.1., for the suggestion:—"That in order to eliminate the possibility of accidents being caused in darkened streets by the confusing glare of head-lights on motor vehicles, such headlights be fitted with a projecting semi-circular hood, so arranged that no direct rays of light can be projected at a greater height than 3 ft. 6 ins. above ground level."

Parcel Traffic on Tramways.—Mr. Wardle, replying in the House of Commons on March 20, to a question by Mr. Gilbert, said that tramway undertakings had power generally speaking to carry parcel traffic, and did in fact carry parcels where circumstances permitted. The attention of tramway authorities had already been called to the matter, in view of the congestion on the railways, and he was inviting the Tramways (Board of Trade) Committee to consider it. Some account of the arrangements for the carriage of goods and parcels on a number of tramways was given in our issue of January 17.

Women Employees' Wages in Glasgow.—An arbitration tribunal, at which the Hon. Alexander Shaw, M.P., presided, sat in the City Chambers, Glasgow, last week to deal with the application of women employees of the Corporation Tramways for an increase of the bonus granted to them. The application was for a bonus of 15s. per week, including 3s. already accorded. The minimum rate of wages for women tramway employees is the same as that for the men, but the latter now receive the 20s. per week advance on pre-war rates, whilst the women do not. The Tramways Committee recently offered an additional bonus to women workers of 2s. 6d. per week, but this was refused. The decision of the arbitrators willl be given in due course.

Liverpool Tramways Assistant Manager.—We understand that from the applications for the position of assistant manager of the Liverpool Corporation tramways recently advertised in our columns, the following short list has been selected for further consideration:—Messrs. F. Coutts, general manager, Paisley District Tramway Company; G. F. Craven, general manager, Reading Corporation Tramways; J. S. D. Moffet, general manager, Belfast City Tramways; R. S. Pilcher, general manager, Aberdeen Corporation Tramways; P. Priestly, general manager, Oldham Corporation Tramways; and W. T. Robson, general manager, Southampton Corporation Tramways.

"Fareless Cars."—In connection with the discussion that is taking place in Southport regarding a Sunday tramway service, a curious fact comes to light. Although Southport Corporation has hitherto run its tramcars on week-days only, the Southport Tramways Company—now absorbed by the Corporation—has always provided a Sunday service over its system in Birkdale. These cars have run consistently for a short distance in Southport, and they have also habitually travelled the length of the town in proceeding to and from their sheds. Whilst so doing no fares could be charged, and numbers of people, knowing of these free rides on that day, habitually used the cars on Sundays. There is even a story of an elderly lady, who was accustomed to rely upon one of them to get to church in time, being very indignant with the driver because upon one occasion the car was late.

Revised Fares at Nottingham.—At the last meeting of the Nottingham Corporation Tramways Committee a comprehensive scheme for the revision of fares was agreed upon. The broad effect of this will be the withdrawal of all 1½d. and 2½d. stages, the charges in these cases being raised to 2d. and 3d. respectively, the abolition of nearly all overlapping and intermediate stages and shortening of distances to which the existing rates apply. Children's halfpenny fares are not touched, but the reduction of distance and overlapping stages will apply to them as well. Workmen's fares continue as at present. The Committee explain that, although the fares will now approximate those charged in the early days after the electrification of the system, in no case are they higher. In view of the large increases in wages, to say nothing of the rise in electric current and materials, they have no option unless the cars are to be run at a loss. Last week the Committee were compelled to grant additions to the wages of their employees amounting to £8,000 a year, which, with those previously given, and the amounts now being paid in separation allowances represent a wages increase of no less than £29,000 annually.

Plymouth Corporation Tramways.—The *Western Daily Mercury* states that the receipts for the current year of the Corporation tramways will evidently be a "record" beyond all expectations. The partial unification of the system has more than justified all that was prophesied of it. When it is completed, the financial success and the public convenience of the service will be so enhanced that the town will hardly "know itself," so to speak. The enlightened and enterprising policy of the penny fare has been triumphant, and it is greatly to be hoped that the new expenditure on revenue account arising from increased wages will not compel the committee to break in upon this principle. There is great need for the careful handling of tramway finance, apart from the uncertainty as to the wages bill. The upkeep of the system on normal lines during the war has been impossible owing to the absence of labour and material. It was always the practice of the Plymouth Corporation to maintain its track and plant out of revenue. This expenditure took the place of the ordinary reserve fund. When normal conditions are restored the committee will be faced with large costs of reconstruction, etc., which cannot be evaded, and conservatism in dealing with tramway profits at the present time is imperative.

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The B. E. A. M. A.—The annual meeting of the British Electrical and Allied Manufacturers' Association was held on February 28, when the report for the year ended September 30, 1917, was adopted. The chairman mentioned that by the revision of the articles of association the B. E. A. M. A. had become an association for manufacturers exclusively, the classes of associate members and associates, consisting chiefly of factors, having been cut out. The report contains an interesting record of the work of the association during the past year, and we hope to publish a summary of it in a later issue.

The Proposed Queensferry Tramway.—On further reference being made, at the last meeting of the Edinburgh Town Council, to the Queensferry Tramway project some question was raised as to the advisability of arranging for a general review of the project and for revised and adjusted figures to be submitted before it is further proceeded with. This is considered highly desirable in view of the expenditure involved, and also on account of a belief that is gaining ground in some quarters that the prospects of the scheme are not so good as they were when it was first discussed. Considerable uncertainty now appears to exist as to the amount of traffic that can be expected from Rosyth, and a still more doubtful factor is that which may be expected to and from Queensferry. The latter would, of course, be mainly tourist and holiday traffic, and substantial doubt is beginning to be felt as to whether the basis of the whole scheme is as sound as it ought to be.

Further Reductions of Tramway Services.—Tramway managers will be very closely concerned in the effects of the latest of the growing series of war-time restrictions. The order whereby restaurants, clubs, etc., will be closed at 9.30 p.m., and all places of entertainment not later than 10.30 p.m., coupled with the decision to ration all the large stations from which electric power is supplied to tramway and other undertakings, will necessarily lead to some considerable re-arrangements of services throughout the area affected. This area includes the district south of a line from Bristol to the Wash. In places outside the London district, the effects will probably begin and end with a further reduction of tramway facilities to fit in with the reduction of current consumption that is to be imposed, inasmuch as there will be little, if any, modification in the habits of the people to render necessary any re-arrangements of service hours. In London, however, it is a very moot question as to how far tramway services can be additionally curtailed without causing inconvenience so great as to make such a step virtually prohibitive. It will probably be found that the indirect results of the "early-closing" order, by reducing the number of hours in which the ordinary services will be run, will represent the chief means by which any further economies in car mileage and current consumption can be attained. Under the new order, it will probably be found that all necessary requirements will be met by running last cars from the central points to the suburbs at about 11 p.m., then carrying on with the "all-night" schedule. This will obviously result in an appreciable saving and materially reduce the period over which the employees' hours of duty have to be spread. Thus, there will be simplification and economy in more directions than one. A certain section of the public, whose hours of work extend to midnight or thereabouts will perhaps be somewhat inconvenienced, but, on the other hand, it may be found possible to meet their special needs. Another effect of these new arrangements will be that of reducing the slack time in the evening that occurs between the business rush and the later period when theatre-goers are on their way home. The two periods will tend more or less to approach, and this again, will to some extent simplify the task of tramway operation in the Metropolis.

Messrs. Dick, Kerr & Co., Ltd.—Combinations of interests with a view to eliminating waste in productions is distinctly the prevailing note in the present stage of industrial development. Particularly is this the case in the engineering and allied trades. A notable example of what is being done in this direction is afforded by Messrs. Dick, Kerr & Co., Ltd., whose many-sided enterprise as civil, mechanical and electrical engineers is world-famous. In the early days of its existence this company were engaged principally in contracting and in the manufacture of light railway material, which was, and is still, carried on at its general engineering works at Kilmarnock. Dick, Kerr & Co., however, have been particularly associated with tramway developments both at home and abroad, which led to their becoming manufacturers of electrical machinery, and to the establishment of the Preston works. In addition to this well-known establishment, the company now own the business of the United Electric Car Co., Ltd., also of Preston, and in addition have acquired control of the old established engineering concern of Messrs. Willans and Robinson, Ltd., of Rugby, whose reputation in connection with the Willans central valve engine and with the manufacture of steam turbines and Diesel engines is world-wide. Within the last few weeks negotiations have been completed with the Phœnix Dynamo Manufacturing Co., Ltd., of Bradford, by which certain standard types of electrical machinery which have been manufactured separately by both companies, shall be manufactured jointly at Bradford. It is scarcely necessary to dwell at length upon the advantage which may be expected to accrue from these arrangements, but one obvious point is that while the technical and manufacturing experience of the various firms will be combined and become available for all, yet it will be possible to confine each works to those products for which it is best equipped. Under the centralised direction of the Dick, Kerr organisation, its extensive home and foreign connections will be available for the associatied companies and such a combination ought to be able to hold its own against any competition which may be met with after the war.

PERSONAL.

Mr. H. Faraday Proctor, electrical engineer of Bristol Corporation, has been granted an increase of £100 in salary to £1,000 per annum as from January last.

Mr. M. W. Clark, chief of the testing department of Cammell Laird and Company, has resigned to take up an appointment as chief electrical engineer to Messrs. Spencer and Co., of Melksham.

Mr. L. W. Woodman, who recently resigned his position as borough electrical engineer of Dover, has accepted an appointmen as electrical engineer to the National Smelting Company, of Avonmouth.

Corporal William Town, Renfrewshire R.E., has been awarded the Belgian Croix de Guerre. At the outbreak of war, Corporal Town was employed in the shops of the Paisley Tramways Company, and has been on active service for more than two and a-half years.

Manchester Corporation Tramways.—The Manchester City Council have approved the recommendation of the Tramways Committee advancing the salaries of the chief officials as follows, viz:—

- MR. JAMES WOOD, Financial Superintendent and Assistant Manager, from £600 to £750 per annum by three annual increments of £50 each.
- MR. J. T. OAKES, Traffic Superintendent, from £500 to £600 per annum by two annual increments of £50 each.
- MR. F. A. MITCHESON, Accountant, from £400 to £550 per annum by three annual increments of £50 each.
- MR. G. R. BLACKBURN, Rolling Stock Superintendent, from £400 to £500 per annum by two annual increments of £50 each.
- MR. D. G. MALLALIEU, Permanent Way Superintendent, from £350 to £400 per annum by two annual increments of £25 each.
- MR. R. BEATTIE, Chief Claims Clerk, from £350 to £400 per annum by two annual increments of £25 each.
- MR. G. W. HANCOCK, Parcels Superintendent, from £350 to £400 per annum by two annual increments of £25 each.
- MR. J. J. MCMAHON, Electrical Engineer, from £325 per annum with house, coal, gas and water, to £350 per annum with house, etc.
- MR. J. W. HEWITT, Cashier, from £300 to £400 per annum by three annual increments (one of £50 and two of £25).
- MR. T. G. KING, Stores Superintendent, from £300 to £350 per annum.
- MISS M. E. HUNTER, Ticket and Cash Counting Superintendent, from £250 to £300 per annum by two annual increments of £25 each.
- MR. H. JACKSON, Chief Clerk, Traffic Department, from £250 to £300 per annum by two annual increments of £25 each.
- MR. H. R. KIERNAN, Chief Assistant, Civil Engineer's Department, from £250 to £300 per annum by two annual increments of £25 each.
- MR. C. H. PEPPER, Assistant Accountant, from £235 to £250 per annum.
- MR. WM. GREY, Chief Clerk, has been appointed Secretary to the Department at the salary of £300 per annum to be increased in 12 months to £350.

FINANCIAL REPORTS AND MEETINGS.

Manila Railroad and Lighting Co.—The directors have declared a dividend of 1½ per cent. ($1.50 per share) on the common stock for the quarter ending March 31.

G. D. Peters and Co., Ltd.—The directors have declared an interim dividend on the preference shares at the rate of 6 per cent. per annum, for the quarter ended March 31.

Wemyss and District Tramways Co., Ltd., had a record year in 1917 in regard to traffic receipts, these amounting to £17,043. The net profit was £6,058, and the dividend is 7½ per cent. on both preference and ordinary shares.

The Dunlop Rubber, Co., Ltd.—The directors of the Dunlop Rubber Company, Limited, announce the payment on April 8, 1918, of an interim dividend of 1s. 9d. per share on the ordinary shares for the half year ended February 28, 1918, being at the rate of 17½ per cent. per annum.

The Parent Tyre Co., Ltd.—The directors of the Parent Tyre Co., Ltd. announce the payment on the 30th inst. of interim dividends on the preference, ordinary and deferred shares for the half-year ended February 28, 1918, at the rate of 5 per cent., 8 per cent. and 24 per cent. per annum respectively.

Gearless Motor Omnibus Co., Ltd.—The accounts for the year 1917 show a net profit of £3,833. This includes £469 brought forward. The dividend is at the rate of 5 per cent. as against 8 per cent. in the previous year; £1,000 is allocated to reserve, which now amounts to £5,064, and £296 is carried forward to 1918 account.

Hastings Tramway Co., Ltd.—The accounts for 1917 show an available profit of £12,972. The directors recommend a dividend of 6 per cent. on preference shares for year, placing £2,500 to depreciation account, and £4,810 to reduction of suspense account, carrying forward £862.

L.C.C Traffic Receipts—The traffic receipts for the week ended March 20 amounted to £54,787, an increase of £7,217, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to March 20 (fifty and a half weeks) the total receipts were £2,779,333, an increase of £393,039 on the corresponding period of 1917.

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Southampton Tramways.—The borough rate will be reduced by one penny this year, chiefly owing to the appropriation from the tramway profits of £7,920, equivalent to a threepenny rate. An attempt was made at a recent meeting of the Finance Committee to secure £10,000 from the tramway profits, but Alderman Dunsford, chairman of the Tramways Committee, succeeded in defeating the proposal, which in view of the present condition of the undertaking, would have been highly injudicious.

Hadfields, Ltd.—The report for 1917 states that the profits amounted to £257,510, or in all, with £185,695 brought forward, to £443,205; subject to adjustments that may be necessary to meet the provisions of the Finance Acts. It is proposed to add £100,000 to reserve and renewal account and to carry forward £209,705. In addition to the interim dividend of 1s. per share paid in July last on the ordinary shares the directors recommend a further dividend of 4s. per share, together with a bonus of 1s. per share, free of tax.

The British Aluminium Co., Ltd. report for 1917 shows profits together with interests and dividends on investments amounting to £423,663, after making provisions for excess profits duty and special taxation; this, with £26,926 brought forward making £460,589. The directors have set aside for income-tax, bad and doubtful debts, depreciation and proportion of profits payable to directors, £103,115; prior lien debenture service fund, £48,000; debenture stock service fund, £43,224; reserve for depreciation, £70,000; reserve account, £750,00, leaving £111,250. A final dividend at the rate of 12 per cent. per annum on the ordinary shares making 10 per cent. for the year, payable less tax, on 1st proximo, is recommended; £33,214 to be carried forward. The reserve account now amounts to £400,000, of which £220,599 has been invested in outside securities, including £200,000 war loan. The depreciation reserve amounts to £380,000.

D. Napier and Son, Ltd.—Mr. H. T. Vane, C.B.E., joint managirg director, in the absence through indisposition of the chairman, Mr. M. N. Napier, presided at the adjourned fourth ordinary general meeting on March 20. In moving the adoption of the report Mr. Vane said that taking into consideration the abnormal conditions under which they had been working, he thought that the result as set out in the balance sheet could be regarded as satisfactory. The increased cost of labour and materials, and delays in obtaining the latter, had been serious difficulties, but their output which had been entirely for Government requirements, had far exceeded any previous year. When they had their new building completed they would endeavour to do even better. The future of the motor industry should be a bright one, in view of the way which motor transport had proved its superiority over all other kinds of transport. There was, however, great need for adequate Government protection for the trade, especially during the few years following the conclusion of peace. They would have to rebuild their sales organisation, and put their factories on a peace footing.

London United Tramways'—Capital Reorganisation.—The committee apointed by the debenture holders of this company in July last to formulate a scheme for the reorganisation of the whole of the capital has issued an interim report. This states that considerable progress has been made in the negotiations between the committee and representatives of the shareholders. In regard to the general effect of the scheme it is not possible at present to say more than that it provides for a great reduction of the present share capital, and the division of the existing Debenture stock of £1,050,000 into equal moieties of Four per Cent. Debenture stock and Five per Cent. Preference shares non-cumulative for five years but with priority of capital. The arrangements proposed are however dependent upon the passing into law of a Bill now before Parliament, and until this is assured it is not possible to submit any definite proposals for the consideration of Debenture holders. The Bill in question provides, among other things, for an extension of the periods of the various franchises under which the tramways are operated and also permits of some increase in the fares. The system urgently requires a large expenditure on renewals and repairs. The committee has agreed to recommend that the money coming from the London County Council amounting to nearly a quarter of a million sterling, and other funds accumulated in the receivership, should be applied to the physical habilitation of the system. They have also agreed to the conversion of part of the existing Debenture stock into Preference shares so that, if necessary part of the earnings otherwise applicable to Debenture interest may for a period be diverted to maintenance.

Sunderland District Tramways.—Mr. H. R. Hogg, chairman of the Sunderland District Electric Tramways, Ltd., presiding at the thirteenth annual general meeting of the company in London on Tuesday, said that the receipts had increased during the year by £5,123, or 16 per cent. The increase had meant the carrying of nearly one million additional passengers, an increase of 18·71 per cent., requiring additional mileage of 72,277. The receipts per car mile were 13·745d., an increase of ·382d., and the running expenses 8·179d., an increase of ·837d. The energy consumption was 1·69 units per car mile, an increase of ·18, partly due to the additional loads carried and partly to less experienced drivers. The board had adopted the conservative policy of retaining in hand sufficient funds for obtaining more cars, and passing loops, which must be put in hand as soon as the requisite labour was available. During the year they had lost 44 men who had been called up. They started training 93 more drivers and 41 had passed the test, and 70 new conductors. The women working in the car sheds and as conductors had proved quite competent. The report, which was adopted, states that, after charging the expense of operation and administration and providing for depreciation of rolling stock, etc. the balance remaining is £12,519, or with £881 from the previous year, £13,400. From this has to be deducted—Interest on the prior lien bonds and first mortgage debentures, £7,100; sinking fund instalment, £500; depreciaton on investment, £600; transfer to general reserve account, £2,200; leaving a balance of £3,000 6s. 3d. From this the directors recommend the payment of interest at the rate of 3 per cent. per annum (less income-tax) on the first income bonds, which will absorb £2,102 4s. 9d., leaving £898 1s. 6d. to be carried forward to the credit of the current year. The traffic receipts show an increase of £5,135 17s. 6d. compared with 1916, but working expenses have been considerably higher, the net result of the year's operations showing an increase in the profit of £665 19s 10d.

Bristol Tramways and Carriage Co., Ltd. — The report for the year ended December 31, 1917, states that the revenue amounted to £642,783, and the working and general expenses and renewals to £530,176, leaving with the amount brought forward from the last account an available balance of £122,243, or an increase of £11,727. Interest on investments has been carried to the reserve fund, and after adjusting the securities to their value at December 31 last, this fund stood at £335,603. With the addition of £30,000 now proposed and £25,000 to provide for deferred repairs, renewals, and exceptional wear and tear of plant and equipment, the total reserves will amount to £390,603. Receipts of the tramway department show an increase of £30,737, and those of the carriage department an increase of £52,987. Passengers increased by 3,353 to 63,981,775. The annual dividend rate which was advanced from 5 to 6 per cent. a year ago, is to be 6¾ per cent. the balance payment of 3¼ per cent. being free of income tax, and £30,000 is once more to be added to the reserve for contingencies and renewals. The total reserves will, with this addition, stand at £390,604. The option of the Bristol Corporation to purchase the company's undertaking was extended during the year by a further order from the Board of Trade to December 31, 1918. A comparison of the results for the past four years is appended:—

	1917.	1916.	1915.	1914.	1913.
RECEIPTS—					
Tramways department ..	£285,333	£254,597	£248,355	£239,651	£243,686
Carriage department ..	347,069	294,081	258,530	209,512	174,701
Sundry receipts	10,381	7,229	5,500	5,611	5,429
	£642,783	£555,907	£512,385	£454,774	£423,816
EXPENSES—					
Traffic expenses	£236,884	£187,567	£175,415	£174,623	£164,810
General expenses ..	79,488	88,472	75,916	58,947	49,275
Renewals, repairs, and maintenance	213,804	174,408	162,189	138,615	129,498
	£530,176	£450,447	£413,520	£372,185	£343,583
Net revenue..	£112,607	£105,460	£98,865	£82,589	£80,233
Balance from last account ..	9,636	5,056	—	—	—
Total	£122,243	£110,516	£98,865	£82,589	£80,233
Interest	£25,696	£27,598	£30,502	£30,638	£27,443
Interest carried to reserve fund	5,270	4,563	4,365	4,468	4,408
Dividend on 4 p.c. Pf. shares	15,000	15,542	17,333	18,458	18,833
Interim dividend (June) on Ordinary shares	9,375 (5 p.c.)	10,052 (5 p.c.)	8,984 (4 p.c.)	9,396 (4 p.c.)	9,417 (4 p.c.)
Final dividend for half-year on Ordinary shares ..	18,750 (7½ p.c.)	13,125 (7 p.c.)	12,625 (6 p.c.)	11,328 (5 p.c.)	11,771 (5 p.c.)
Addition to reserve fund ..	30,000	30,000	20,000	8,301	8,361
Carried forward	£18,152	£9,636	£5,056	—	—

DICK, KERR & Co.,

Limited,

ABCHURCH YARD, CANNON STREET, LONDON, E.C.,

ENGINEERS & CONTRACTORS.

Complete Equipment

TRAMWAYS & LIGHT RAILWAYS

at home and abroad

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

DIVIDENDS PREV.	DIVIDENDS LAST.	NAME.	PAID.	PRICE, JULY 27, 1914.	CASH Mar. 21 or previous.	A WEEK AGO.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	67¼	68½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4¾	56/3	55/-
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4¾	46/10½	46/10½
4%	4%	Do. 4% Deb.	100	91	65½	66
4½%	4½%	Do. 4½% Deb.	100	98½	68	67½
5%	5%	Do. 5% Deb.	100	96	66	66
—	—	Associated Omnibus Co., Ord. ..	5/-		1/2	1/2
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	104	103
—	1/-	Bath Electric Trams Pref. Ord.	1	¼	3/4½	3/4½
6d.	6d.	Do. 5% Cum. Pref. ..	1		10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23	20½
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11½	£9/18/-	9½
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	43½	44
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	88½	90
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5½	5½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	90	91
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	26	27
6%	5%	Do. Pref. Ord.	100	106	32	32
5%	5%	Do. 5% Cum. Pref. ..	100	103	52½	51½
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	85	85
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	59½	59½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	31½	31½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	72½	73
5%	5%	Do. 5% Deb.	100	92	78½	78½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	70	70
6/8*	2/6	Calcutta Tramways Ord. ..	5	7½	6¾	£6/16/6
2/6	2/6	Do. 5% Cum. Pref. ..	5	5½	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1		12/3	12/-
1/3	1/3	City of B. A. Trams	5	5½	80/-	80/-
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	82½	82½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7¾	7¾
6/-	6/-	Do. 6% Pref.	10	12	10½	10½
—	—	Hastings & Dis. Elec. Tram Ord.	10/-		1/6	1/1
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1		10/6	10/1½
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
1/1½	1/1½	Hong Kong Tramway	5/-		17/9	17/9
5%	5%	Do. 5% Deb. ..	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	¾	2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co. ..	10	10½	10	10
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79½
9½d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
--	1½d.	London & Sub. Traction Ord. ..	1		1/6	1/9
6d.	6d.	Do. 5% Pref.	1		5/1½	5/6
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	61½	61½
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80½	80½
5%	5%	Do. 5% Inc. Deb... ..	100	88½	76½	76½
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	42½	44
3/-	3/-	Madras Elec. 6% Pref. ..	5	5½	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	86	86
7½d.%*	9½d.*	Manaos Trams & Ltg. Ord. ..	1		3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	70	71
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	73½	75½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70½	70½
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	26½	26½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	36½	36½
—	—	Do. 6% Mt. Bds. ..	100	76	25½	25½
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs...	100	100	88½	88½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1		16/3	16/3
9½d.*	9½d.*	New General Traction	1	¾	7/3	7/3
8½d.	6d.	Northern Gen. Trans. Ord. ..	1		12/9½	12/9½
6/-*	3/-	Para Elec. Rlys. Ord.	5	4½	78/9	78/9
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	7/3	7/6
—	—	Do. 7% Non. Cm. Part Pf.	1	—	14/1½	14/-
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1		6/8½	6/8½
6d.	6d.	Do. 5% Pref.	1		12/1½	12/-
8d.	1/4	Provincial Trams. Ord. ..	1	¾	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	86½	86½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	75	75½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86½	86½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	72	72
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/6½	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	91½	91½
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77½	77½
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	32/6	32/6
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	69	66
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	¾	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	¾	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	76½	76½
—	—	Metropolitan Dist. Ord. ..	100	21½	14½	14½
—	—	Undgd. Elec. Rys. of London ..	10	21½	30/-	32/6
		Do. "A"	1/-	¾	4/9	5/1½
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	103½	103½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	99½	99½
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	79	79½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1913	Incr. or Dec
Aberdare U.D.C. ..	Mar. 12	370	461	+ 91	49	22,227	+ 2,520
Aberdeen Corporation ..	,, 13	1,676	2,204	+ 528	41	89,142	+ 11,747
Ayr Corporation ..	,, 16	260	342	+ 81	44	19,885	+ 2,661
Belfast City	,, 14	5,553	7,363	+ 1,810	50	334,106	+ 50,691
Birkenhead Corporation	,, 17	1,542	1,894	+ 352	50½	92,749	+ 15,795
Birmingham Corporation	,, 9	15,489	20,372	+ 4,883	49	918,902	+ 138,787
do. Motor Omnibuses ..	,, 9	746	1,163	+ 417	49	52,955	+ 5,623
Blackburn Corporation ..	Feb. 6	960	1,571	+ 611	45½	67,531	+ 11,857
Bournemouth Corporation	Mar. 20	1,838	2,523	+ 685	50½	127,971	+ 16,231
Bradford Corporation ..	,, 9	5,632	7,003	+ 1,371	49	373,619	+ 45,307
Burnley Corporation ..	,, 16	1,622	1,959	+ 337	..	..	..
Burton-on-Trent Cor. ..	,, 17	253	361	+ 108	50	16,372	+ 2,520
Bury Corporation	,, 17	1,422	1,665	+ 243	50½	82,057	+ 11,419
Chatham & District ..	,, 14	1,110	1,186	+ 76	11	11,827	+ 420
Cork Electric	,, 14	468	623	+ 155	11	5,967	+ 1,247
Derby Corporation ..	,, 16	1,029	1,229	+ 200	50	61,142	+ 5,638
Dublin United	,, 1	5,941	7,305	+ 1,364	9	61,814	+ 11,088
Dundee City	,, 13	1,246	1,565	+ 319	43½	67,597	+ 7,991
East Ham Corporation ..	,, 16	1,114	1,330	+ 216	50	68,032	+ 4,805
Exeter Corporation ..	,, 15	291	377	+ 86	50	19,732	+ 230
Glasgow Corporation ..	,, 16	23,806	27,650	+ 3,844	41½	1,093,770	+ 123,845
Glossop (U.E. Sup. Co.) ..	,, 16	132	178	+ 46	11	1,941	+ 570
Halifax Corporation ..	,, 12	1,709	2,225	+ 516	49½	119,421	+ 12,831
do. Motor Buses ..	,, 12	42	48	+ 6	49½	2,442	+ 18
Hastings and District ..	,, 18	968	1,093	+ 125	11	10,521	+ 841
Huddersfield Corporation	,, 16	2,703	3,208	+ 505	50	160,097	+ 20,414
Ilford U.D. Council ..	,, 16	618	793	+ 175	50	38,287	+ 5,272
Ipswich Corporation ..	,, 16	378	554	+ 176	50	32,952	+ 8,558
Isle of Thanet	,, 16	249	194	— 55	24	4,111	— 1,243
Kilmarnock Corporation ..	,, 16	165	224	+ 59	43½	9,031	+ 1,422
Lanarkshire	,, 14	2,390	3,347	+ 957	11	32,377	+ 7,064
Lancashire United ..	,, 13	1,781	2,596	+ 815	11	25,880	+ 8,124
Leeds City	,, 16	9,566	11,045	+ 1,539	50	552,061	+ 66,254
Leicester Corporation ..	,, 16	3,242	4,251	+ 1,009	..	..	..
Leyton U.D. Council ..	,, 14	1,534	1,779	+ 245	50	92,718	+ 12,808
Liverpool Corporation ..	,, 16	14,134	16,733	+ 2,549	10½	176,821	+ 27,287
Llandudno & Colwyn Bay	,, 8	167	242	+ 75	14	3,262	+ 685
London County Council	,, 20	47,570	54,787	+ 7,217	50½	2,779,333	+ 393,032
Maidstone Corporation ..	,, 14	179	251	+ 72	50	12,246	+ 1,738
Manchester Corporation	,, 16	18,563	23,695	+ 5,132	50	1,065,338	+ 136,075
Nelson Corporation ..	,, 16	194	244	+ 50	50	11,869	+ 1,394
Newcastle-on-Tyne Cor.	,, 16	6,912	8,450	+ 1,538	50	398,442	+ 62,010
New St. Helens & Dist. ..	,, 13	1,020	1,333	+ 313	37	51,149	+ 12,058
Northampton Cor. ..	,, 15	665	911	+ 246	50	42,497	+ 6,774
Nottingham Corporation	,, 14	3,717	4,802	+ 1,085	50	225,552	+ 32,352
Oldham Corporation ..	,, 17	2,432	3,030	+ 598	51	144,847	+ 21,999
Portsmouth Corporation	,, 10	2,045	2,581	+ 546	..	..	..
Provincial	Jan. 26	1,750	2,479	+ 729	16½	39,274	+ 5,569
Reading Corporation ..	Feb. 28	841	1,146	+ 305	48	51,137	+ 10,172
Rhondda Tramways ..	Mar. 7	1,283	1,553	+ 270	10	14,471	+ 2,383
Rotherham Corporation	,, 20	1,631	1,981	+ 350	51½	93,450	+ 14,163
Sheffield Corporation ..	,, 17	11,249	12,916	+ 1,667	51	623,549	+ 82,850
Southampton Cor. ..	,, 13	1,532	2,305	+ 773	48½	103,943	+ 21,642
Southend-on-Sea Cor. ..	,, 13	597	698	+ 101	50	42,883	— 542
South Shields Cor. ..	,, 9	775	1,029	+ 254	49	47,651	+ 6,615
Sunderland Corporation..	,, 17	1,519	1,943	+ 424	50	93,810	+ 11,583
Sunderland District ..	Feb. 27	619	872	+ 253	17	13,787	+ 3,114
Swindon Corporation	Mar. 20	216	284	+ 68	50½	13,918	+ 3,500
Torquay Tramways ..	,, 7	409	613	+ 204	10	6,138	+ 1,919
Tyneside Trys. & Trmrds.	Feb. 27	645	897	+ 251	9	6,759	+ 1,671
Wallasey Corporation	Mar. 16	1,191	1,484	+ 293	50½	77,845	+ 11,052
Walsall Corporation ..	,, 19	822	1,131	+ 309	50	50,596	+ 9,792
Walthamstow U.D. Coun.	,, 16	948	1,200	+ 252	50	60,620	+ 7,767
Warrington Corporation	,, 7	491	736	+ 245	49	29,774	+ 5,331
West Ham Corporation	,, 14	3,094	3,733	+ 639	49½	181,653	+ 23,622
Wigan Corporation ..	,, 7	1,633	2,212	+ 579	50	102,708	+ 18,724
Yorkshire (West Riding)	,, 17	1,928	2,259	+ 331	11	25,666	+ 5,962

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Mar. 18	£52,831	£56,612	11	£594,671	+ £38,937
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Dec. 20	3,931	4,127	40	32,971	+ 360
Brazilian Traction (Mlrs.)	Jan.	7,266,000	7,837,000	4	7,837,000	+ 571,000
Brisbane	Feb.	29,800	32,009	8	66,509	+ 3,689
British Columbia .. $	Dec.	496,959	555,555	26	2,923,660	+ 258,275
Buenos Aires Lacroze ..	Feb.	35,977	34,397	34	303,775	— 1,239
Burmah Tram. & Light Rs.	Feb.	22,912	22,985	30	184,236	+ 217
Calcutta .. .. Rs.	Mar. 16	68,670	75,884	11	763,712	+ 35,199
Cape Town	Jan.	18,440	19,707	..	..	..
Carthagena and Herrerias	Feb.	3,223	4,031	9	8,042	+ 887
Cordoba	Jan.	12,432	12,845	43	134,966	— 641
East India	Feb.	1,570	1,318	30	8,767	— 5,826
Hong Kong.. .. $	Jan. 19	13,640	12,272	3	35,853	— 1,705
Kalgoorlie	Nov.	2,355	2,641	47	29,564	+ 1,026
La Plata	Feb.	4,092	4,745	8	9,456	+ 1,049
Lima	Jan.	36,841	43,536	4	43,536	+ 6,695
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Feb. 28	28,511	33,553	34	149,194	+ 15,257
Manaos	Nov.	142,858	146,047	..	..	..
Manila .. .. $	June	59,432	73,900	..	..	..
Montevideo	Feb.	32,304	34,573	17	135,674	+ 10,261
Pernambuco	Mar. 3	3,387	4,347	9	41,976	+ 9,704
Peruvian .. .. $	Feb.	844,770	925,410	34	8,203,030	+ 917,633
Port Elizabeth	Jan.	4,493	4,779	..	..	..
Rangoon	Feb.	4,605	5,662	8	11,023	+ 1,785
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Jan. 19	12,966	12,252	3	36,040	— 1,780
Toronto .. .. $	Nov.	911,829	1,052,000	47	10,966,998	+ 1,161,954
Winnipeg .. .. $	Nov.	282,899	305,881	47	3,039,897	+ 16,227

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THE

Tramway & Railway World

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Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

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WEEKLY LIST OF TENDERS INVITED.

CITY OF MANCHESTER.

The Electricity Committee of the Manchester Corporation are prepared to receive Tenders for the Supply, Delivery, and Erection at their Moss Side Sub-Station of—

Three 3,000 k.v.a., 33,000 volts, 3-phase Static Transformers.

Specifications and Form of Tender may be had on application to Mr. F. E. Hughes, Secretary, Electricity Department, Town Hall, Manchester.

Further particulars and information can be obtained on application to Mr. S. L. Pearce, Chief Engineer and Manager, Dickinson Street, Manchester.

Tenders, duly endorsed and addressed to the Chairman of the Electricity Committee, must be delivered at the Town Hall, not later than 10 a.m., on Tuesday, the 2nd April proximo.

The firm entrusted with this work will be required to enter into a Contract to be prepared by the undersigned.

The Corporation do not bind themselves to accept the lowest or any tender.

THOMAS HUDSON,
Town Clerk.

Town Hall, Manchester.
March 11th, 1918.

BOROUGH OF DOVER.

Contract for Clothing, for Tramways Staff.

The Town Council invite Tenders for the supply of Clothing, Caps and Oilskins, etc., for the Tramway Inspectors, Drivers and Conductors.

The Clothing must be made by British workmen.

Forms of tender and Conditions of Contract may be obtained at my Office during office hours.

Tenders must be delivered at my office not later than 10 a.m., or presented personally at the Town Hall at 4.0 p.m. on the 16th April next.

By order.
R. E. KNOCKER,
Town Clerk.

Town Clerk's Office,
69, Castle Street, Dover,
22nd March, 1918.

POSITIONS VACANT.

EDINBURGH CORPORATION.

Electricity Department.

Shift Engineer wanted at once to take charge of the plant during an eighth-hour watch.

The position is temporary for the present, but may become permanent. Applicants must have had previous experience of both direct-current and extra-high-tension generating plant.

The commencing salary, including bonus, will be at the rate of £213 per annum.

Preference will be given to applicants ineligible for military service.

Applications, stating age and experience, and accompanied by copies of three testimonials, to be sent to

F. A. NEWINGTON,
Electricity Supply Office, Edinburgh.

COUNTY BOROUGH OF SALFORD.

Electricity Department.

Wanted, two experienced Switchboard and Sub-station Attendants for 3-phase A.C. and D.C. systems. Salary 50s. to 65s. (inclusive of all bonus) for 53 hours, according to experience and ability.—Apply, personally or by letter, giving full particulars, to the BOROUGH ELECTRICAL ENGINEER, Frederick Road, Salford.

L. C. EVANS,
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THE
Tramway AND Railway World

Established in 1892 and Published by

THE TRAMWAY & RAILWAY WORLD PUBLISHING CO., Ltd.
AMBERLEY HOUSE, NORFOLK STREET, LONDON, W.C.

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SATURDAY, MARCH 30, 1918.

STREET LIGHTING AND TRAFFIC ACCIDENTS.

THE Board of Trade has not yet published Colonel Pringle's report on the recent accident at Bradford, in which a car, after running down an incline, overturned at a curve; but Colonel Pringle at the enquiry made some forcible comments on the inadequate lighting of the streets at the point where the accident occurred. He said that it seemed to him to be impossible to expect a proper degree of safety if a driver during the hours of darkness had no adequate means of knowing exactly where he was at night, and where he should stop. The accident took place on a particularly dark morning, but, in accordance with air-raid instructions, there was not a street in the whole town that was lighted, even at dangerous points. As Colonel Pringle observed, this position of acting as though there were to be an air raid every night, although week after week and month after month went by without one, is not a good one to take up from the point of view of the safety of the public. If this case stood alone it would constitute an argument sufficiently strong to justify reconsideration of the measures that have been taken in view of one possible danger, but which have brought others equally serious in their train. The increase in the numbers of persons killed and injured in the streets during the period when lighting restrictions have been in force very considerably exceeds the total of victims of enemy aircraft. The evidence given during the Bradford enquiry shows how grave this additional peril is, and this testimony is powerfully supported by the formal report of another tramway accident at Glasgow. In this case Colonel Pringle expressly stated, however, that there was no direct evidence to show that the motorman was driving at a reckless speed while approaching the curve, and that his failure to reduce speed within safe limits was due to the insufficient lighting of the streets at that particular point not enabling him to gauge accurately where he was at the time. We have thus two serious tramway accidents within a couple of months in which the question of street lighting is an important factor, and scores of ordinary running-over cases to which the same remark applies. In the Glasgow case the report contains certain recommendations on the subject which have been acted upon. No doubt the Bradford report, when its terms are made known, will also deal with the question. Such measures, however, after loss of life has occurred are somewhat futile, and it ought not to be necessary to wait until the mischief has been done elsewhere before applying the obvious remedy. No doubt the issuing of sweeping orders, without qualifications or exceptions, has the attraction of simplicity to those who have to look after our affairs during the present stressful times. But simplicity often carries with it the drawback of clumsiness, and the procedure of plunging towns into total darkness to meet a more or less contingent peril at the cost of creating new and very actual dangers is not only clumsy to the last degree, but it is lacking in intelligence. This species of administrative crudity might have been tolerable for a short period, but as the war goes on more discriminating methods are necessary. For instance, it should not be too formidable a task for the Board of Trade to draft and issue new emergency tramway regulations specially adapted for restricted lighting conditions. If the present powers of the Board are insufficient, a new Order under the Defence of the Realm Act would provide the requisite sanction.

L.C.C. TRAMWAY MATTERS.

At the meeting of the London County Council on Tuesday the Highways Committee announced that they had re-elected Mr. G. H. Hume as chairman, and had appointed him as their representative on the General Purposes Committee. A number of reports were presented on various matters relating to the tramways department, all of which were adopted.

REORGANISATION OF THE TRAMWAYS DEPARTMENT.

The Special Sub-Committee on tramways organisation, of which Mr. T. C. Harrison is chairman, had presented a final report dealing with matters outstanding in connection with the reorganisation of the tramways department, and the Highways Committee submitted the following proposals to give effect to the sub-committee's recomendations :—

GENERAL BRANCH.

Some time ago the Council decided that at the earliest convenient time that part of the accountancy work now done in the tramway department should be transferred to the department of the Comptroller of the Council. The Highways Committee are satisfied that in the present state of the staff of both the department of the Comptroller of the Council and the tramways department it is not practicable, owing to war conditions, to effect the transfer of the accountancy work. It is proposed to organise the work of the accountancy branch in six sections: viz., (1) Clerical, (2) Accounts, (3) Stores, (4) Ticket Checking, (5) Claims, and (6) Printing. Each section will be under the immediate supervision of the head of the branch (the Chief Clerk). The work to be assigned to the several sections and sub-sections is specified in a report made to the sub-committee by the General Manager of the Tramways department in consultation with the Clerk and the Comptroller of the Council. The work of (1) the clerical section will be divided into two sub-sections (*a*) correspondence and information; (*b*) miscellaneous. As long as Accounts Section remains a part of the tramways department the responsibility for its works remains with the general manager, the Comptroller of the Council giving approval to the principles and methods adopted. The work of the section will be divided into four sub-sections, viz., (*a*) departmental accounts; (*b*) wages; (*c*) pay clerks; and (*d*) traffic receipts. Pending any changes after the war in the Stores Section, this section will be divided into three sub-sections, viz., (*a*) Stores order, etc.; (*b*) Stores' records; (*c*) Storekeeping.

Head of the General Branch.—The Council on February 20, 1917, decided that a chief clerk should be appointed in the tramways department, the salary to be £600 a year, rising by £50 a year to £800 a year. The Highways Committee recommended that Mr. W. P. Farquharson, the general assistant, who has been acting in the position of chief clerk, should, in view of his proved ability and long experience, be appointed to the position at a salary of £800 a year, the position of general assistant being abolished. The Committee also recommended that Mr. H. Vorley, at present tramways accountant, should be placed in charge of the clerical and accounts section, at a salary of £550 a year, rising after one year to £600 a year.

APPOINTMENTS TO VARIOUS POSITIONS.

Other recommendations included the following promotions to certain positions as heads of sub-sections in the accounts section :—

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Mr. H. T. Hider (1st class at £255), and Mr. R. E. Meatyard (1st class at £255), these promotions to take effect as from January 1, 1918. Mr. T. R. Ireland was recommended for appointment as claims superintendent in the tramways department at the commencing salary of £300 a year, and Miss E. Hodge as superintendent of women checkers of the tramways department at a salary of £250 a year.

Positions were created on the permanent staff for two mains inspectors, one in each of the two distribution sections, and the salary was fixed at £200 a year, rising by £12 10s. a year to £250 a year.

The two positions of technical assistants were designated "established positions," to be subject to appointment by resolution of the Council, the salary attached to each position to be £230, rising by £10 a year to £280; also two positions of Rolling Stock Inspectors, the scale of salary being the same as for the technical assistants; the position of a day foreman in each of the three class A depots (at Holloway, New Cross and Clapham), at a weekly rate of pay of £3 12s. 6d. to £4; the principal foreman in each of the three class A depots positions, at a weekly rate of pay from £3 to £4.

Purchase of Tramway Stores and Equipment.

The Highways Committee reported that they had considered a letter from the Tramways (Board of Trade) Committee pointing out that great difficulty is being experienced in obtaining delivery of materials from contractors, and that in order to obtain materials, emergency orders have frequently had to be given to firms with whom contracts have not been placed. In order that the tramway services may be maintained, the Board of Trade Committee consider that it is necessary during the present conditions that the regulations or practice of inviting tenders should be temporarily discontinued, to enable orders to be placed where delivery can best be made. The Priority Department of the Ministry of Munitions, which deals with the priority and delivery of tramway stores, have stated that in view of the present conditions it is not so much a question of which firm is able to supply the cheapest goods, as the placing orders with firms which can combine rapidity of execution with the minimum of interference with important Government orders. The difficulties referred to have been very noticeable in connection with the supply of stores for tramways; and in order to meet these difficulties and the views of the Board of Trade Committee, the Highways Committee proposed that as an experiment until October 31, 1918, the practice of inviting tenders for six or twelve months' supply of tramway stores and equipment should be discontinued, and that offers should be obtained from time to time for the supply of goods, etc., subject to a limit of £250 in any one case. In certain cases where arrangements are made for long period contracts for the supply of articles of a special nature, the existing practice will be continued.

Tramway Employees—Bonus of 12½ Per Cent.

The General Purposes Committee recommended that the award dated March 1, 1918, of the Committee on Production with regard to the payment of a bonus on earnings of 12½ per cent. be applied to the men concerned in the lists of each schedule submitted by the Council to the Committee on Production. The total additional cost in the tramways department will amount to £3,500 for the current financial year, and £33,125 a year subsequently.

Employees in the Traffic Branch.

The Traffic Conciliation Board arrived at the following decision on March 20, 1918, affecting the employees in the traffic branch:—The wages of all male employees (except certain grades receiving a bonus of 12½ per cent. on earnings) are to be increased by 1s. 4d. per day. Employees receiving a bonus of 12½ per cent. on earnings shall, if the bonus falls short of the equivalent of 1s. 4d., have their war wages increased to the extent of such shortage. The war wages of women conductors are to be increased in accordance with the interpretation which the Committee on Production placed on their award of March 8, 1918, respecting tramway and motor omnibus workers. The war wages of women mess room attendants are to be increased by 4s. a week. The cost of giving effect to these changes is estimated at £9,450 for the remainder of the current financial year, and £113,000 in 1918-19. The special sub-committee of the Highways Committee on Tramways operation is to give early consideration to the financial position resulting from this addition to the already heavy burden on the undertaking.

Electric Power Supply in Great Britain.

The General Purposes Committee submitted a long report reviewing the report of the Coal Conservation Sub-Committee appointed by the Ministry of Reconstruction, dealing with the question of electric power generation and transmission, and a report by the Electric Supply Committee of the Board of Trade. The Council's sub-committee on London's Electricity Supply assume that no legislative action will be taken upon the report of the Coal Conservation Sub-committee until after the issue of the report of the Electric Power Supply Committee. Since the dropping of the Council's Bill of 1915, the question of electricity supply has been under the consideration of the special committee with a view to the formulation of a scheme for Greater London. The special committee have received and are considering suggestions on behalf of certain local authorities, and they are awaiting suggestions from the electric supply companies. Pending the issue of a report by the Electric Power Supply Committee, the General Purposes Committee consider it unnecessary for the Council to form any conclusion as to the findings and recommendations contained in the Coal Conservation Sub-committee's report, and they merely directed the attention of the Council to the chief points dealt with and to the recommendations made in that report.

LONDON UNDERGROUND RAILWAYS EFFICIENCY MEETINGS.

The sixth meeting of the third series of operating department efficiency meetings connected with the London Undergrond Railways, and the London General Omnibus Co., was held on March 19 at the L.G.O.C. training school, Milman's Street, Chelsea, Mr. H. E. Blain, operating manager, presiding over an attendance of about 100 members of the control staff.

A paper on "Road Surfaces" was read by Mr. A. L. Westwick, of the general superintendent's office, L.G.O.C. In an interesting preliminary introduction, Mr. Westwick traced the history of roads from the Roman period, through the developments, owing to stage coaches, into turnpike roads, and the gradual evolution of macadam, wood-paved, asphalte, and stone roads. Modern road construction was dealt with very fully the author discussing the various requirements of a good carriage-way, the question of camber, gradient surface drainage, gulleys and width.

The various types of road surfaces were described including binding material, road metalling, maintenance of repairs, with expedients for the prevention of dust, and the effects of watering, tar-painting, etc. Various causes for the deformation of road surfaces were considered and the paper was illustrated with a large number of diagrams and slides showing methods of road construction and specimen roads in all parts of the world. An interesting discussion was contributed to by Messrs. T. W. A. Hayward, borough surveyor, Battersea; W. L. Johnston, chief depot engineer, L.G.O.C.; A. Edmonds, under assistant to the engineer, Underground Railways; E. Willis, surveyor, Chiswick, U.D.C.; and W. E. Blake, superintendent of the line, Underground Railways.

TRAMWAY FARES.

Mr. Councillor Heap, chairman of Burnley Tramways Committee, has stated that the question of an increase in tramway fares will have to be considered. The wages account shows an increase of £13,520 over pre-war figures, and the recent award of the Committee on Production to tramway employees would add another £2,000 to that sum.

Alderman Meyer, chairman of York Tramways Committee, at the Town Council meeting said that the number of people travelling was increasing by leaps and bounds, but the expenses were rising much more rapidly than the receipts. They had increased the fares and would watch the experiment very closely. If the same number of people travelled at the increased fares as before, they would more than make good the heavy increase in wages; otherwise they would be in a difficult position because of the award of the Committee on Production, which might entail an increase of £2,000 in wages.

At a meeting of the Brighton Town Council, Councillor Black said the tramway returns had been so satisfactory that it was hoped by the Tramways Committee that it would not be necessary to raise the fares, notwithstanding the increased cost of wages and materials.

The Tramways Committee of Salford, having received an estimate from Mr. G. W. Holford of the additional expenditure involved by the award of the Committee on Production, have decided to increase the fares, and a sub-committee has been appointed to prepare a scheme.

The Swansea Tramways Company have added a halfpenny to the ordinary fares. The change was necessitated by the increase in the wages bill of nearly £7 000.

Leeds Corporation have decided to give effect immediately to the award of the Committee on Production, and the wages of tramway drivers and women conductors have accordingly been increased as from March 1. Drivers who have been receiving £2 12s. 6d. per week (37s. 6d. pre-war wage and 15s. war bonus) will have their bonus advanced to £1, making their wage £2 17s. 6d., and women conductors whose wages have been 39s. 6d. (including 12s. war bonus) will have their bonus increased by 4s., making their wage £2 3s. 6d.

The Municipal Employees Association of Newcastle have made an application on behalf of the workmen in various municipal departments, with the exception of the uniformed staff of the Corporation tramways, for a further increase in war bonuses. They request that the amount be advanced to 20s. per week.

Southend Town Council have agreed to increase the tramway fares so as to meet the higher working expenses.

Peterborough Tramway Company have increased the fares on account of the award of an increase of £1 a week to all tramway employees above pre-war rates.

Birmingham Tramway traffic employees who were threatening a strike have been granted a 12½ per cent. bonus from December 15. Women conductors over 18 years of age get an increase of 3s. 6d. a week, and those under 18 get 1s. 9d. rise.

BRADFORD TRAMWAY DISPUTE.

The arbitration between the tramway authorities and the National Transport Federation with regard to the interpretation of clauses 4 and 5 in the award of the Committee on Production has been fixed for Thursday morning, the 28th inst., but as this issue, owing to the Easter holidays, is published on that day, the result will be given in our next issue. These clauses are as follows:—Clause 4: . . . there shall be paid to the men concerned, aged 18 and over,

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and to the grades of women aged 18 and over, whose terms of employment include an undertaking that they shall be paid the same rates as the grades of men whose places they have filled, such advance as shall give £1 per week over the pre-war rates of the grades concerned. Clause 5: In the case of women, aged 18 and over, not covered by clause 4, the advances now being paid shall be increased by 4s. per week, subject to a maximum of 20s. per week over the pre-war rates of the grades concerned. A joint deputation of the Bradford Tramways Committee and representatives of the employees came to London on Wednesday to lay the case before the Committee on Production.

A CALL TO THE INDUSTRIAL ARMY.

NO CESSATION OF WORK AT EASTER.

The Minister of Munitions on Tuesday night issued the following call to "every one concerned in the manufacture of munitions":—

A special effort must be made to replace promptly the serious losses in guns, machine-guns, and ammunition which are resulting from the great battle now in progress.

It should be our part in the struggle to maintain the armament and equipment of the fighting troops at the highest level. Our resources are, fortunately, sufficient to accomplish this up to the present in every class of munitions. But it is necessary to speed up the completion and dispatch of important parts of the work in hand.

There are cetain classes of guns and shells which are specially useful now which can be released in large additional numbers in the next few weeks. This is also true of Tanks and machine-guns and repair work of many kinds.

I rely upon every one concerned in the manufacture of munitions to put forward their best efforts. There should, therefore, be no cessation of this work during the Easter holidays.

I acknowledge with gratitude the spontaneous assurance already received from the men in many districts that there will be no loss of output. Now is the time to show the fighting army what the industrial army can achieve.

MISCELLANEOUS NEWS AND NOTES.

This Week's Issue, owing to the Easter holidays, is published on Thursday morning, and the prices of tramway and omnibus shares given in our usual list are quotations of Wednesday.

Cork Tramway Service.—Owing to the difficulty in obtaining coal, the services of the Cork electrec tramway may have to be considerably curtailed, and possibly discontinued.

Tramway Car Drivers.—The Home Secretary proposes to grant certificates to discharged soldiers over 19 years of age to act as tramway car drivers on tramways in the Metropolis.

W. T. Henley's Telegraph Works Company have issued a neat list, bound in flexible cloth, giving particulars of conductors as adopted by the Engineering Standards Committee, as well as net prices for cables.

Galway and Salthill Tramways.—Mr. Michael Crowley has been appointed by the Master of the Rolls as official liquidator for the winding up of the business of the Galway and Salthill Tramway Company.

Strike at Doncaster.—The tramway employees of the Doncaster Corporation, who have been on strike for a fortnight, have returned to work. The dispute will be referred to an arbitrator to be appointed by Sir George Askwith.

Women Drivers at Portsmouth.—Portsmouth Tramways Committee propose to employ women drivers. The routes are level, and it is thought that, from the experience of other towns, women may be safely put in charge of the cars.

A Manager for Edinburgh Corporation Tramways.—A sub-committee of Edinburgh Town Council have agreed to recommend that in view of the tramways coming into the hands of the Corporation next year the time has arrived when a manager of the undertaking should be appointed.

Tynemouth Tramways.—Tynemouth Corporation have engaged Mr. J. B. Hamilton, general manager of Leeds Corporation tramways as consulting engineer to assist the Corporation in the proposed purchase of the tramway undertaking. For the proposed tramway extension a sub-committee of the Corporation have reported in favour of the trackless system.

Austin Lorry for Motor Transport Volunteers.—A three-ton Austin motor lorry costing £800 has been presented by Mr. S. B. Joel to the Motor Transport Volunteers. The lorry is at work every night, and in the course of a week conveys over one thousand soldiers on leave between the northern and southern railway stations in London at a time when no public conveyance is available.

Spitting on Tramway Cars.—On the recommendation of the Public Health Committee, the Greenwich and the Woolwich Borough Councils have asked the London County Council to appoint inspectors over military age to detect persons infringing the by-law as to the spitting on tramway cars, with a view to avoiding the consequent danger to health.

Derby Tramways.—After having been compelled to run a reduced service during the afternoon for over two months, in consequence of difficulties at the electricity station, the full service of cars was resumed on Monday between 4.30 and 6 p.m. Mr. F. Harding, the tramways manager, stated that the service might, however, be liable to temporary interruption during the next few weeks, as the plant at the power station is barely sufficient to meet the great demands for munition works.

New Station at Belfast.—The Tramways and Electricity Committee have had under consideration arrangements for the work in connection with the new electricity station on the Harbour Estate. The points dealt with embrace plans and specifications, advertising the contract, and the completion of negotiations with the Harbour Commissioners regarding the site.

London Accidents and Restricted Lighting.—Dr. Waldo, coroner for the City and Southwark, has pointed out in his annual return that in 1917 no fewer than sixty-eight inquests were held in his district on traffic fatalities. This was the highest number on record, and the chief factor in increasing the death roll was undoubtedly the restricted lighting.

Coal Supply of Dublin Tramways.—At a meeting of the tramway employees, recently, it was stated that the tramway company had a sufficient supply of coal to run the cars for fifteen months. The company state however, that this report is wholly devoid of truth. The stock of coal has been steadily decreasing owing to shipping difficulties, and is now barely sufficient to last twenty-eight days at the present rate of consumption.

Sunday Services at Southport.—A Sunday service of cars on the Southport Corporation tramways was run for the first time on Sunday last. The local Church Council consider that the matter was dealt with too hastily by the Town Council, and a plebiscite is to be taken on the question. In connection with the matter about 15,000 circulars are being distributed. The contention is that Sunday cars are not for the good of the town.

Leeds Tramway Parcel Service.—It is proposed that the following should be the charges for the conveyance of parcels on Leeds tramcars:—Between depots within the city: For any parcel not exceeding 7 lb. in weight, 2½d.; for any parcel exceeding 7 lb. and not exceeding 14 lb., 3½d.; exceeding 14 lb and not exceeding 28 lb., 4½d.; exceeding 28 lb. and not exceeding 56 lb., 6d. Between depots outside the city and depots within the city; For each parcel irrespective of weight an additional 1d.

Institution of Electrical Engineers.—A joint meeting of the Institution of the electrical section of the Royal Society of Medicine will be held at the Cancer Hospital, Fulham Road, S.W., on Thursday, April 11, at 7.30 p.m. when the following papers will be read:—Dr. E. P. Cumberbatch: "Diathermy: The use of electricity for heating the tissues of the body in disease." Dr. R. Knox: "Single flash (instantaneous) radiography, its possibilities and limitations." There will also be an exhibition of electro-medical apparatus.

Stoppage of Cars at Manchester.—Owing to a breakdown at the Stuart Street generating station, Manchester, the whole of the tramway service was stopped for some twenty minutes on March 19, between 8.20 and 8.40 a.m. It was estimated that 600 cars were stopped, carrying from 25,000 to 30,000 passengers. The Manchester *Evening News* remarked that "the whole contretemps shows how much we are dependent upon the cars, and what a tremendous amount of inconvenience can be caused by even a short stoppage."

Carlisle and its Tramways.—At the last meeting of Carlisle City Council the question of the unsatisfactory condition of the tramway system in the city was again referred to. It was announced that the Company had appointed an engineer to make an investigation and report. It was pointed out that due allowance must be made for war-time conditions, but it was a question as to whether the directors of the Company, who lived at a distance, had been fully alive to the present state of things. In a friendly spirit this had not been brought home to them, and the Council could feel assured that they were desirous of doing all they could to remedy it.

L.C.C. Cars Sold to Provincial Tramways.—Six of the smallest of the London County Council cars have been sold to Southampton Corporation at £550 each, ten cars have been sold to Rotherham, ten to Sheffield, six to Newport and five to Bexley. A number of cars have also been lent to the Metropolitan Electric Tramways, fifteen of which would be returned next month, for the purpose of through running. Six cars have been lent to Bexley for war service on the Bexley tramways, and twelve cars for service on the Dartford line to replace cars damaged by fire. All sales or loans, except in the case of the Metropolitan tramways, were made at the suggestion of the Ministry of Munitions to assist the transport of workers.

The Retort Courteous!—Conductresses on the New York Interborough Street Railway Co. have recently been supplied with uniforms somewhat similar to those worn by women employees on London 'buses. It appears, however, that some passengers objected to them, on the alleged ground of immodesty, and addressed protests to the managements. The latter's reply took the form of a placard which was shortly afterwards displayed in the cars. It read: "Our conductresses' uniforms were made to be worn, not to be looked at and criticised. Keep your feet out of the aisle, fold your newspaper, drop your fare in the box, and WATCH YOUR STEP."

Carlisle Tramways.—At a recent meeting of the Council, the Mayor, in complaining of the state of the tramways, said that the cars were in a bad condition and that the service was unreliable in the extreme. Allowances had to be made, of course, for the fact that war time conditions made it increasingly difficult to maintain the services. The complaints had been brought to the attention of the directors in a friendly spirit, and as a first step they had instructed an engineer to examine and report to them on the whole service. The General Purposes Committee of the Council had appointed a sub-committee to go fully into the question, and it was hoped that the service would be so improved as to become a credit to the city.

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Newport's Proposed Extensions.—The Newport Corporation Electricity and Tramways' Committee have had under consideration the question of extending the tramways from the present terminus in Corporation Road to the Channel Dry Dock. These extensions are required in order to give necessary travelling facilities for the employees of the Mannesmanns Tube Works, numbering about 1,000. They now recommend the provision of a single line with loops of a length of 7 furlongs 4 chains, the total cost of which will be £25,036. Additional cars will also be necessary. Alternatively, it was decided to ask the Government to provide travelling facilities by rail from the Dry Docks to Corporation Road, the Corporation undertaking to provide an adequate tramcar service.

Burnley Employees Object to Late Cars.—In view of complaints regarding the services at night on certain sections of its system, the Burnley Corporation Tramways Department recently decided to provide late services. This involved extensions varying from fifteen to twenty minutes of working hours. For some time past a special late car had been run from Burnley to Nelson for the benefit of soldiers on leave arriving at Burnley by the last train from London. The employees, however, objected to the proposed change, and intimated that they would not work the additional late cars, although willing that the special soldiers' car should continue to run. Negotiations, however, have since been in progress, and it is hoped that a settlement of the difficulty may be reached on the lines of the Corporation providing special cars to convey the employees home after they have finished their late duties.

Conductor Exceeded his Duty.—In Glasgow Sheriff Court, Sheriff Boyd has dismissed as irrelevant an action by Messrs. Mary Brown or Campbell, against the Corporation of Glasgow for £75 in name of loss, injury, and damage sustained by her through the actings of the conductor of a tramway car on which she was a passenger. The Sheriff said the conductor detained pursuer on the car and called a policeman and charged her with attempting to pass a bad shilling; that she was taken to a police station and searched, and that the shilling was returned to her as genuine. Assuming the pursuer's statements to be true, a serious wrong was done her. In taking it on himself to conclude that the shilling had been tendered with criminal intent and making a charge of this character, the Sheriff thought he went beyond what was the conductor's duty to the defenders, and he did not think they could be held liable for this excess.

Newcastle Tramways' Contribution to Rates.—At a meeting of Newcastle City Council on March 21, it was stated that the Tramways Committee had sanctioned a contribution of £14,000 for the benefit of the rates. Mr. Richard Mayne, chairman of the Tramways Committee, said that the receipts of the tramways eight years ago were £203,000, four years ago they were £293,000, and this year they were £410,000. The working expenses for the same periods were £117,000, £140,000 and £238,000 respectively. There was a net surplus this year of £49,000 after making provision for every possible contingency. Mr. Mayne assured the Council that the tramways undertaking was in a sound position. By 8 votes to 2, he added, the Tramways Committee had decided to give £14,000 towards the rates. After making allowance for the contribution from the Tramways Committee, it was found that it would be necessary to raise the municipal rate by 6½d. in the £.

Tramway Cars in Collision with Vehicles.—A Glasgow vanman in the employment of the Caledonian Railway Company, has been awarded £50 in respect of personal injuries sustained through his van being run into by a corporation tramway car on July 20 last. At Cardiff County Court, on March 20, a taxicab owner was awarded £30 damages for injuries received in a collision between a tramway car and a taxi-cab. The plaintiff stated that a driver in his employment was proceeding from the Great Western Railway Station to the docks, and as the cab was crossing into Bute Street it was run into by a car. It was alleged that the driver gave no signal, and that he was driving at an excessive speed. The defence was that the collision was due to a swerving on the part of the taxicab driver. Judge Hill Kelly found that the cause of the accident was excessive speed on the part of the tramway car driver. Judge Taylor, in Liverpool Court of Passage, has awarded £140 damages to Thomas Dunne, an electric car driver, against the Clydesdale Haulage Company, in respect of personal injuries. A collision occurred between a car driven by the plaintiff and a motor lorry belonging to the defendants, and each party alleged negligence.

Interesting Point as to Parcel Delivery.—In Aberdeen Small Debt Court, the Corporation tramways department was sued by John Black, tea merchant, for £4 18s. 9d. in respect of the alleged non-delivery of a parcel containing tobacco and cigarettes addressed to James Brown, Bridge of Dee, and handed to a tramway conductor for delivery on December 20 last. The case for the defenders was that they did deliver the parcel, while Brown and Mrs. Brown testified that it had never been delivered to them. For the tramway department, a conductor said he had no doubt he delivered the parel. When inquiry was made, Mrs. Brown admitted having got a parce from the conductor; but said it was not the parcel in question, It was brought out in evidence that when a boy messenger was sent by the department with a parcel the signature of the consignee was obtained on delivery, but when delivery was made by one of the tramway conductors no signature was taken. Sheriff Young said Mrs. Brown had made an admission that a parcel was delivered by the conductor, and the books of the tramway department showed that a parcel was sent by tramcar, in the custody of the conductor referred to, to Mr. Brown on December 20. He found that delivery of the parcel had been proved, and assoilzied the tramways department with expenses.

Decimal Coinage would Facilitate Tramway Working.—The Tramways' Finance Committee of the Glasgow Corporation point out in a recently issued report on the proposed introduction of a decimal system of coinage that such a system would enable increases and decreases of fares to be made by easier stages. If, for instance, it were found necessary to charge a little more than a minimum fare of ½d., the 3-mil. coin (·72d. of present currency) would yield slightly less than ¾d., and if the penny fare required to be altered, the 5-mil. coin (1·2d. of present currency) would yield slightly less than 1¼d. It is pointed out that, should the Corporation pass a resolution favouring the introduction of decimal coinage, it would strengthen the hands of those who are pressing for the change.

Prize for Gas-Driven Motor Cars.—The Automobile Association offers a prize of £1,000 to encourage the development of a convenient and inexpensive method of utilising coal gas as a fuel for motor car engines. The competition will close on December 31 next. In framing the conditions of the competition, the end has been kept in view of enabling gas to be carried in a small space not exceeding 19 cubic feet—sufficient gas, that is, to take the place of between two and three gallons of petrol—so as to permit a car to run approximately 50 miles on a single charge of gas. The weight of the container must not exceed 140 lb., and the cost must not be more than £20, or the annual hire charge £5. The expense of establishment and working plant for changing the containers must not increase the cost of the motors by more than 3d. for such an amount of gas as an equivalent of one gallon of petrol.

PERSONAL.

Mr. T. E. van Putten has been appointed director of the municipal tramways of Amsterdam, succeeding Mr. J. J. Neiszen, who has resigned.

Mr. J. Brierley, traffic superintendent of Oldham Corporation tramways, has been appointed traffic superintendent of the Rhondda tramways.

Mr. G. H. Hume has been re-appointed chairman of the London County Council Highways Committee for the ensuing year, and Mr. A. H. Scott has been re-appointed vice-chairman.

Mr. W. P. Farquharson, general assistant and acting chief clerk in the tramways department of the London County Council, has been appointed to the position of chief clerk, at a salary of £800 per annum.

Mr. Thomas Turner, a clerk in the York Corporation tramways department, who enlisted in June, 1915, has been given a sub-lieutenancy in the Royal Naval Reserve, with the position of Assistant Paymaster.

Lance Corporal G. Braund, formerly a conductor in the service of the Bristol Tramways and Carriage Company, has been awarded the Military Medal for conspicuous gallantry and devotion to duty in the field in November last.

Mr. Harry Webber, electrical engineer and tramways manager, of Keighley, has been granted an increase in salary as tramways manager from £100 to £175 per annum. This is in addition to his salary of £400 a year as electrical engineer.

Mr. C. W. Mallins, general manager of Liverpool Corporation Tramways, has been appointed chairman of the sectional committee (under the Tramways (Board of Trade) committee) for the Lancashire Cheshire and North Wales area. Mr. J. Barnard is the hon. secretary.

Mr. E. Roddy, who has relinquished the position of traffic manager of the Rhondda tramways to take up a position in South Wales and Monmouthshire for the Ministry of Food, has been presented with a cheque by the officials and staff of the company, the police and the general public. Mr. Roddy will take up his new duties early in April.

Mr. J. S. D. Moffet, M.Inst.C.E., M.I.E.E., general manager of Befast Corporation tramways, has been recommended by the Liverpool Tramways Committee to the City Council for appointment to the position of deputy general manager of the Liverpool Corporation tramways. From a large number of applicants the following were selected for interview by the Committee:—Major Fred Coutts, general manager and electrical engineer, Paisley District Tramways Company; Mr. G. F. Craven, general manager and electrical engineer, Reading Corporation tramways; Mr. A. R. Dayson, general manager and electrical engineer, Sunderland Corporation tramways; Mr. J. S. D. Moffet, general manager, Belfast Corporation tramways; Mr. P. Priestly, general manager, Oldham Corporation tramways; and Mr. W. T. Robson, general manager, Southampton Corporation tramways. Mr. Moffet, who was born in Sunderland in 1874, studied engineering at the Heriot-Watt College, Edinburgh, and at Durham University. He commenced his business training at Clarke's engineering works, on the Wear, and afterwards became a premium pupil to the borough engineer of Sunderland, under whom he qualified as a civil engineer. In 1899 he was appointed engineering assistant to the borough engineer of Rochdale. Five years later he obtained in open competition the appointment of general manager of the Rochdale Corporation Tramways and was responsible for the organisation and equipment of the system. Mr. Moffet retained this appointment until July, 1913, when he was appointed tramway manager to the West Ham Corporation, and subsequently the superintendence of the track was also transferred to his care. He was appointed successor to Mr. Andrew Nance as general manager of Belfast City Tramways in July, 1916, a position which he has since held. He

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TRAMWAY TRACK CONSTRUCTION AND MAINTENANCE.

By R. BICKERSTAFFE HOLT,

Highways and Permanent Way Engineer, City of Leeds.

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Mr. C. J. Spencer's Services at the Admiralty.

In connection with the resignation by Mr. C. J. Spencer, general manager of Bradford Corporation Tramways, of his position of assistant director (labour division) of the shipyard labour department of the Admiralty, the following letters have passed showing how highly appreciated Mr. Spencer's work has been in official quarters. Sir Alan G. Anderson who signs the first letter is controller to the Admiralty.

Admiralty, Great George Street, S.W.
March 9, 1918.

Dear Mr. Spencer.—I regret that circumstances have compelled the Bradford City Council to ask for your release in order that you may resume your former duties, and desire to express my thanks to you for the patriotism which you have displayed in placing your services at the disposal of the Admiralty. I appreciate very deeply the great ability and zealous care with which you have so successfully carried out your duties as Assistant Director (Labour Division) of the Shipyard Labour Department, and hope that you will allow me to have the benefit of your advice and experience from time to time in dealing with the labour problems of the department.—Yours very truly, ALAN G. ANDERSON.

The following letter from the Admiralty was received by the Lord Mayor of Bradford:—

With reference to your letter of the 19th ult. intimating that the Bradford City Council desire the Admiralty to release Mr. C. J. Spencer, General Manager of the Bradford city tramways, in order that he may resume his duties at Bradford, I am commanded by My Lords Commissioners of the Admiralty to say that they accede to the request with great reluctance, and desire to convey their thanks to you and to the Council for their patriotic spirit in lending Mr. Spencer's services to the Admiralty for the past thirteen months.

My Lords desire to record their high appreciation of the able and zealous manner in which Mr. Spencer has successfully carried out the responsible work entrusted to him as assistant director (labour division) of the shipyard labour department, and to express their regret that circumstances have compelled the Council to require him to return to Bradford. My Lords will be glad to have the opportunity from time to time of utilising the advice and experience of Mr. Spencer in circumstances where it may be greatly to the advantage of the Admiralty so to do.

The Right Hon. The Lord Mayor of Bradford,
Town Hall, Bradford.

FINANCIAL REPORTS AND MEETINGS.

Irish Tramway and Railway Undertakings.—A white paper issued last week states that the estimate required for the year ending March 31, 1919, for payments under the Tramways and Public Companies (Ireland) Act, 1883, etc., the Railways (Ireland) Act, 1896, the Marine Works (Ireland) Act, 1883, 1902, and for purposes connected with Irish railways amounts to £48,342. This represents a net decrease of £1,275 on the estimate for the present year

Yorkshire (West Riding) Electric Tramways Company.—The directors' report for 1917 shows a net income, after providing for debenture interest and making provision for deferred repairs, of £32,521; £15,952 was brought forward, making £48,474. The directors have declared a dividend of 6 per cent., less tax, on the preference shares; applied £5,000 to purchase of funded preferential dividend certificates; £12,456 to renewals, depreciation, reserve fund in lieu of accident insurance, and general reserve fund; £20,609 being carried forward.

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Dividends Prev.	Dividends Last.	Name.	Paid.	Price. July 27, 1914.	Cash Mar. 27 or previous.	A Week Ago
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	68	67⅞
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅞	52/6	56/3
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4½	46/10½	46/10½
4%	4%	Do. 4% Deb.	100	91	65½	65½
4½%	4½%	Do. 4½% Deb.	100	98½	68	68
5%	5%	Do. 5% Deb.	100	96	65½	66
—	—	Associated Omnibus Co., Ord. ..	5/-	1/32	1/2	1/2
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1 3/32	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102⅛	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	104	104
—	1/-	Bath Electric Trams Pref. Ord.	1	1/32	3/4½	3/4½
6d.	6d.	Do. 5% Cum. Pref. ..	1	3/16	10/6	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72⅛	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11⅛	£9/18/-	£9/18/-
4½%	4½%	Do. 4½% Deb.	100	96	74½	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	42⅜	43½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	88½	88½
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5⅜	5⅜
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91	90
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	27	26
6%	5%	Do. Pref. Ord.	100	106	32½	32
5%	5%	Do. 5% Cum. Pref. ..	100	103	52⅜	52¾
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	85	85
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	59⅜	59⅜
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	32½	31½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	73½	72½
5%	5%	Do. 5% Deb.	100	92	78½	78½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	70	70
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6⅞	6⅞
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1	1/16	12/3	12/3
1/3	1/3	City of B. A. Trams	5	5½	81/-	80/-
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	82½	82½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 3/32	7 3/32
6/-	6/-	Do. 6% Pref.	10	12	10½	10½
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/6	1/6
1/2⅜*	1/2⅜*	Do. 6% Cum. Pref. ..	1	1/16	10/6	10/6
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
1/1½	5½d.	Hong Kong Tramway	5/-	7/16	17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84⅜	74½	74½
—	—	La Plata Trams. Ord.	1	3/32	2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co.	10	10⅜	10 1/16	10 1/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79⅜	79⅜
9⅜d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	1/32	1/6	1/6
6d.	6d.	Do. 5% Pref.	1	1/16	5/-	5/1½
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	59	61½
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80½	80½
5%	5%	Do. 5% Inc. Deb.	100	88½	76½	76½
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	39½	42½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	84½	86
7½d.%*	9½d.*	Manaos Trams & Ltg. Ord. ..	1	3/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	70	70
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	73⅜	73⅜
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70½	70½
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	26½	26½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	36⅜	36⅜
—	—	Do. 6% Mt. Bds. ..	100	76	25½	25½
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	88½	88½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2⅜*	National Steam Car	1	3/32	17/3	16/3
9⅜d.*	9⅜d.*	New General Traction	1	1/8	7/3	7/3
8⅜d.	9d.	Northern Gen. Trans. Ord. ..	1	3/32	12/9½	12/9½
6/-*	3/-	Para Elec. Rlys. Ord.	5	4½	78/9	78/9
5%	5%	Do. 5% 1st Deb.	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	7/1½	7/3
—	—	Do. 7% Non. Cm. Part Pf.	1	—	13/10½	14/1½
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8⅜d.*	Potteries Elec. Trac. Ord. ..	1	3/32	6/6	6/8½
6d.	6d.	Do. 5% Pref.	1	3/32	12/1½	12/1½
8d.	1/4	Provincial Trams. Ord. ..	1	1/8	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	87½	86¾
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	74½	75
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86⅛	86⅛
5%	5%	Do. 5% Perp. Deb. ..	100	99½	72	72
12/-	10/-	Shanghai Elec. Cons.	10	13	14⅜	14⅜
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/6½	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	92	91¾
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77⅛	77⅛
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	32/6	32/6
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	66	69
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	3/32	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	5	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	76⅛	76⅛
—	—	Metropolitan Dist. Ord. ..	100	21¼	13¾	14¼
—	—	Undgd. Elec. Rys. of London ..	10	21⅛	30/-	30/-
		Do. "A"	1/-	3/32	4/9	4/9
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	103½	103½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	99½	99½
4%	4%	Do. 6% In. Bonds Rd. ..	—	88⅛	78	79

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

Names.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C. ..	Mar. 19	390	444	+ 54	50	22,671	+ 2,574
Aberdeen Corporation ..	„ 20	1,785	2,127	+ 342	42	91,269	+ 12,088
Ayr Corporation ..	„ 23	264	352	+ 88	45	20,191	+ 2,748
Belfast City	„ 22	5,585	7,314	+ 1,729	51	341,420	+ 52,420
Birkenhead Corporation	„ 24	1,543	1,946	+ 403	51½	94,695	+ 16,198
Birmingham Corporation	„ 16	16,674	20,600	+ 3,926	50	939,502	+ 142,713
do. Motor Omnibuses ..	„ 16	886	1,226	+ 340	50	54,181	+ 5,963
Blackburn Corporation ..	Feb. 6	960	1,571	+ 611	45⅔	67,531	+ 11,857
Bournemouth Corporation	Mar. 20	1,838	2,523	+ 685	50⅔	127,971	+ 16,231
Bradford Corporation ..	„ 15	7,007	5,775	— 1,232	50	379,394	+ 44,075
Burnley Corporation ..	„ 23	1,580	2,080	+ 500	..	..	..
Burton-on-Trent Cor. ..	„ 24	254	374	+ 120	51	16,747	+ 2,640
Bury Corporation ..	„ 24	1,372	1,740	+ 368	51½	83,797	+ 11,787
Chatham & District ..	„ 14	1,110	1,186	+ 76	11	11,827	+ 420
Cork Electric	„ 14	468	623	+ 155	11	5,957	+ 1,247
Derby Corporation ..	„ 23	989	1,306	+ 317	51	62,448	+ 5,956
Dublin United	„ 1	5,941	7,305	+ 1,364	9	61,814	+ 11,088
Dundee City	„ 20	1,292	1,558	+ 266	44½	69,156	+ 8,261
East Ham Corporation ..	„ 23	1,203	1,340	+ 137	51	69,373	+ 4,942
Exeter Corporation ..	„ 22	302	373	+ 71	51	20,106	+ 301
Glasgow Corporation ..	„ 23	24,246	28,130	+ 3,884	42⅔	1,121,909	+ 127,884
Glossop (U.E. Sup. Co.) ..	„ 16	132	178	+ 46	11	1,941	+ 570
Halifax Corporation ..	„ 19	1,957	2,311	+ 354	50⅜	121,781	+ 13,184
do. Motor Buses ..	„ 19	49	52	+ 3	50⅜	2,494	+ 21
Hastings and District ..	„ 18	968	1,093	+ 125	11	10,521	+ 841
Huddersfield Corporation	„ 16	2,703	3,208	+ 505	50	160,087	+ 20,414
Ilford U.D. Council ..	„ 16	618	793	+ 175	50	38,287	+ 5,272
Ipswich Corporation ..	„ 23	376	599	+ 223	51	33,551	+ 8,770
Isle of Thanet	„ 23	247	211	— 36	25	4,322	— 1,279
Kilmarnock Corporation	„ 23	166	223	+ 57	44½	7,254	+ 1,478
Lanarkshire	„ 14	2,390	3,347	+ 957	11	32,377	+ 7,064
Lancashire United ..	„ 20	1,962	2,577	+ 615	12	28,457	+ 8,740
Leeds City	„ 16	9,506	11,045	+ 1,539	50	552,061	+ 66,254
Leicester Corporation ..	„ 23	3,226	4,324	+ 1,098	..	..	..
Leyton U.D. Council ..	„ 21	1,618	1,786	+ 168	51	94,504	+ 12,976
Liverpool Corporation ..	„ 16	14,184	16,733	+ 2,549	10⅚	176,821	+ 27,237
Llandudno & Colwyn Bay	„ 15	197	270	+ 73	15	3,532	+ 758
London County Council ..	„ 20	47,570	54,787	+ 7,217	50½	2,779,333	+ 393,039
Maidstone Corporation ..	„ 21	187	251	+ 64	51	12,497	+ 1,803
Manchester Corporation ..	„ 16	18,563	23,695	+ 5,132	50	1,065,338	+ 136,075
Nelson Corporation	„ 16	194	244	+ 50	50	11,869	+ 1,394
Newcastle-on-Tyne Cor. ..	„ 23	7,166	8,845	+ 1,679	51	407,333	+ 63,733
New St. Helens & Dist. ..	„ 20	1,102	1,328	+ 226	38	52,477	+ 12,279
Northampton Cor.	„ 22	692	916	+ 224	51	43,413	+ 6,998
Nottingham Corporation ..	„ 21	3,814	4,782	+ 1,968	51	230,334	+ 33,320
Oldham Corporation ..	„ 24	2,081	3,180	+ 1,099	52	148,026	+ 23,098
Portsmouth Corporation ..	„ 10	2,035	2,581	+ 546	..	..	..
Provincial	Jan. 26	1,750	2,479	+ 729	16⅞	39,274	+ 5,569
Reading Corporation ..	Mar. 21	814	1,147	+ 333	51	54,576	+ 11,220
Rhondda Tramways ..	„ 7	1,283	1,553	+ 270	10	14,471	+ 2,383
Rotherham Corporation ..	„ 20	1,631	1,981	+ 350	51½	93,450	+ 14,163
Sheffield Corporation ..	„ 17	11,249	12,916	+ 1,667	51	623,549	+ 82,850
Southampton Cor.	„ 20	1,632	2,262	+ 629	50½	106,206	+ 22,272
Southend-on-Sea Cor. ..	„ 20	641	676	+ 35	51	43,559	— 507
South Shields Cor.	„ 16	779	1,014	+ 235	50	48,665	+ 6,855
Sunderland Corporation ..	„ 24	1,565	2,091	+ 526	51	95,900	+ 12,108
Sunderland District ..	Feb. 27	619	872	+ 253	17	13,737	+ 3,114
Swindon Corporation	Mar. 20	216	284	+ 68	50½	13,918	+ 3,500
Torquay Tramways	„ 7	409	613	+ 204	10	6,138	+ 1,919
Tyneside Trys. & Trmrds.	„ 6	613	847	+ 234	10	7,607	+ 1,906
Wallasey Corporation ..	„ 23	1,189	1,564	+ 375	51⅔	79,409	+ 11,427
Walsall Corporation ..	„ 19	822	1,131	+ 309	50	50,596	+ 9,792
Walthamstow U.D. Coun.	„ 23	991	1,236	+ 245	51	61,856	+ 8,012
Warrington Corporation	„ 7	491	736	+ 245	49	29,774	+ 5,331
West Ham Corporation	„ 14	3,094	3,733	+ 639	49⅓	181,653	+ 23,622
Wigan Corporation ..	„ 14	1,755	2,198	+ 423	51	104,905	+ 19,167
Yorkshire (West Riding)	„ 17	1,928	2,259	+ 331	11	25,666	+ 5,962

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

Name.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Mar. 18	£52,831	£56,612	11	£594,671	+ £38,937
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Dec. 20	3,981	4,127	40	32,971	+ 360
Brazilian Traction (Mlrs.)	Jan.	7,266,000	7,837,000	4	7,837,000	+ 571,000
Brisbane	Feb.	29,800	32,009	8	66,509	+ 3,689
British Columbia .. $	Dec.	496,059	555,555	26	2,923,660	+ 258,275
Buenos Aires Lacroze ..	Feb.	35,977	34,397	34	303,775	— 1,239
Burmah Tram. & Light Rs.	Feb.	22,912	22,985	30	184,236	+ 217
Calcutta .. .. Rs.	Mar. 23	65,175	72,275	12	855,987	+ 42,299
Cape Town	Jan.	18,440	19,707	..	..	..
Carthagena and Herrerias	Feb.	3,223	4,031	9	8,042	+ 837
Cordoba	Jan.	12,432	12,845	43	134,966	— 641
East India	Feb.	1,570	1,318	30	8,767	— 5,826
Hong Kong .. .. $	Jan. 19	13,640	12,272	3	35,883	— 1,705
Kalgoorlie	Nov.	2,555	2,641	47	29,564	+ 1,026
La Plata	Feb.	4,092	4,745	8	9,456	+ 1,049
Lima	Jan.	36,841	43,536	4	43,536	+ 6,695
Lisbon .. .. Escu	Oct.	203:955	249,406	..	..	..
Madras (2 weeks) Rs.	Feb. 28	28,511	33,553	34	149,194	+ 15,257
Manaos	Nov.	142,858	146,047	..	..	..
Manila .. .. $	June	59,432	73,900	..	..	..
Montevideo	Feb.	32,304	34,573	17	135,674	+ 10,261
Pernambuco	Mar. 17	3,365	4,726	11	51,428	+ 12,391
Peruvian .. .. $	Feb.	844,770	925,410	34	8,203,030	+ 917,638
Port Elizabeth	Jan.	4,493	4,779	..	..	..
Rangoon	Feb.	4,605	5,662	8	11,023	+ 1,785
Shanghai	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Jan. 19	12,966	12,252	3	36,040	— 1,780
Toronto .. .. $	Nov.	911,829	1,052,000	47	10,986,908	+ 1,161,954
Winnipeg .. .. $	Nov.	282,899	305,881	47	3,039,397	+ 16,227

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THE

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Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

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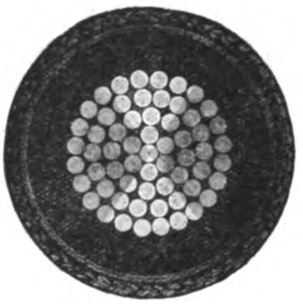
1837.  1918.

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THE
Tramway AND Railway World

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SATURDAY, APRIL 6, 1918.

WOMEN CAR DRIVERS.

SEVERAL daily newspapers have recently stated that women are about to be licensed as tramway car drivers in London. The statement in reality does not record a fact, but is an anticipation of a probability. The paragraph which has gone the rounds was probably based on the remarks made by Mr. James Devonshire at the meeting of representatives of tramways in the metropolitan area on February 27 last, at which a local advisory committee under the Tramways (Board of Trade) Committee was constituted. As reported in our issue of March 14, Mr. Devonshire said that it was now clear that women must be employed to drive on suitable routes and he testified to the success of women drivers in Scotland. As shown by figures published in our issue of March 23, the percentage of female tramcar drivers in the Northern country is 18·6. No corresponding figures are available for England, but it is certain that the ratio is very much lower. London in the wider sense of the term is the great area where the change, if carried out, would release a large number of men for military or other national service. The new call which will undoubtedly be made for men as a consequence of the military situation in France emphasises the need for employing women to drive on routes devoid of dangerous gradients, and otherwise comparatively easy. We believe that the Tramways (Board of Trade) Committee are negotiating with the Home Office and the Commissioner of Metropolitan Police, who are the authorities having power in the matter, and if their objections can—as is likely in the present national emergency—be overcome, women will be licensed to drive tramcars in the metropolitan area. No disaster has arisen from allowing them to drive in other towns where permission is obtained locally, nor has any catastrophe resulted from women driving automobiles right in the heart of the charmed circle of London. The objection may be taken that most of the cars in the metropolitan area are very large and heavy compared with those used in the provinces, and are therefore more difficult to control. The reverse is, in fact, the case. Outside of London many of the cars are not fitted with the magnetic slipper brake, and the application of the hand brake for a quick stop is what calls for the muscular power of a man. Even where magnetic brakes are fitted, they are generally employed only on emergency. But in London the magnetic brake is not only generally fitted but it is used as the service brake. Its application calls for no muscular effort; it is applied simply by a reverse motion of the controller handle. It is so powerful that the question of the weight of the car really does not arise. Of course, no one would argue in favour of the employment of women drivers if it was a matter of choice; but more and more every able-bodied man of military age is required for national service. No serious importance need be attached to the objection of the Metropolitan Police to women drivers. Their obstructive attitude towards tramways has been well known for many years. It has been overcome before as regards other things, *e.g.* the use of trailer cars, and it will no doubt be overcome again. The call for the present change is certainly more urgent than that in many previous cases.

INCREASE IN TRAMWAY FARES.

The new scale of fares on the Nottingham Corporation tramways took effect on March 29. All the odd halfpenny fares have been raised to a penny. Journeys are reduced to something like what they were when the tramways were first electrified, and overlapping stages have been abolished. Transfer tickets were withdrawn some time ago. The raising of prices has been forced on the Committee by the great increase in wages and the cost of materials. The *Nottingham Guardian*, in its issue of March 30, has some sensible remarks in regard to the increase in fares, about which there has been some local complaint. It says :—" The tramway cars cannot be run at a loss. If this were done people who use them would be getting outdoor relief in a new form. In other words they would be pauperised, and none of them wish that. The service must be regarded as a business undertaking. It must pay a fair rate of interest on the money the ratepayers have invested in it."

The question of further increasing the tramway fares was before a meeting of Birmingham Tramways Committee on March 27. It was resolved to ask the Council to apply to the Board of Trade for sanction to vary the present statutory obligations. The penny stage now extends to two miles, and application will be made for permission to reduce that distance. This step has been rendered necessary by the recent decision to give the 12½ per cent. bonus to the employees of the traffic department.

Important changes in tramway fares came into force on April 1 on the Birmingham and Midland tramways, and the halfpenny and three-halfpenny children's fares have been discontinued.

Kirkcaldy Tramways Committee have resolved that fares shall be raised.

Mr. L. E. Harvey, general manager of Ilford tramways, has reported to the Council that it will be absolutely necessary to increase fares in view of the large amount now being paid in war bonuses.

On March 30 a new scale of fares came into operation on the Yorkshire (West Riding) Electric Tramways. The quarter-mile sections have been abolished, and the regular fares are to be at the rate of one penny for two- half-mile sections or less. Workmen's and children's fares remain as at present.

On Derby Corporation tramways the fares will be increased, the odd halfpenny fares on long distance runs being raised a halfpenny. The Derby *Daily Express* remarks that " in view of the increased rates, probably from 8s. to 8s. 6d., it is important that the tramways should pay for themselves."

In view of the altered circumstances, increases may have to be made in fares on the Glasgow Corporation tramways. A recommendation is to be made to the Council, and it will probably be considered at the next meeting a fortnight hence.

TRAMWAY EMPLOYEES' WAGES.

Darwen General Purposes Committee has decided to accept the award of the arbitrator and to pay increased wages to tramway workers.

At a mass meeting of the employees of the Dublin United Tramways Company, Mr. R. Williams, secretary of the Transport Workers Federation, said that he had learned from the Ministry of Labour that the application for the extension of the national award to Dublin tramway men had been referred to the Committee on Production.

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BRADFORD WAGES DISPUTE.

DECISION AGAINST WOMEN CONDUCTORS.

At a meeting of the War Wages Committee of the Bradford Corporation on April 3, it was reported that the decision of the Committee on Production with regard to the wages dispute between the conductresses employed on the Bradford tramway service and the Tramways Committee had been received. It will be remembered that the Ministry of Labour had been asked to interpret the award given on March 8 last by the Committee on Production relating to tramway and motor-omnibus workers' wages. By that award an advance of £1 per week on pre-war rates was granted, but it was held by the Bradford Tramways Committee, that this, while it applied to the men, did not apply to the women tramway workers, who had been receiving a smaller war bonus than that received by the men. The committee's contention was that under the award the women were entitled to an advance of 4s. per week, making an advance of 13s. per week on pre-war rates.

The question was by agreement submitted to the Ministry of Labour, who referred it to the Committee on Production. The decision of that Committee is as follows :—

The terms of employment of women in the service of the Bradford Corporation (Tramways Department) did not entitle them to the same rates of war bonus or war wage advance as have been granted to men, and the further war wage advance to which the women concerned have become entitled is 4s. per week, in accordance with Clause 5 of the award of the Committee on Production.

At the meeting of the Bradford War Wages Committee appreciation was expressed of the way in which the case had been dealt with by the officials concerned. It was stated that at the hearing of the case on behalf of the respective parties before the Committee on Production, the Corporation was represented by the Tramways Manager (Mr. C. J. Spencer), the City Treasurer (Mr. F. Ogden Whiteley) and the Deputy Town Clerk (Mr. Norman L. Fleming). The chairman and deputy-chairman of the two committees concerned were notified, but did not attend, being content to leave the matter in the hands of the officials named.

AMERICAN ELECTRIC RAILWAYS AND THE WAR.

A DIFFICULT POSITION.

The spirit in which our American allies are confronting the task that lies before them is strengthening day by day, and will grow ever more determined as the difficulties become more clearly realised. Our excellent contemporary, the New York *Electric Railway Journal*, has recently reviewed the position of the electric railway industry in America, and despite the great difficulties that weigh upon the companies, it indicates that there is a firm intention to go forward with courage and, facing the facts as they are, to prepare to meet whatever tests of endurance the crisis may impose. In its issue of March 9 our contemporary writes :—

As the first anniversary of the entry of the United States into the world war approaches, it is worth while to attempt to size up the situation so as to utilise the experience so far gained in preparing for the tug-of-war which undoubtedly is to come. The collapse of Russia probably means a considerable prolongation of the war, and if it is to last for several years more, each successive year will present greater operating difficulties for electric railways. There will be a real test of the mettle of the industry here, as there already has been one abroad. In the railway business, as in the country's military, naval and aerial preparations, we must get ready for a long continuation of hostilities.

It would seem as if no business could be harder hit than was ours during the past year The war has brought sky-rocket prices of materials, shortage of labour, money and materials, unusual transportation burdens, etc., and it will bring more of these. It is an uncomfortable time for the responsible manager or the responsible employee, but it is a time when there is much of promise visible to those who look on the business as a means of service rather than merely a means of livelihood. The times are separating the sheep from the goats.

The great lesson that the war is teaching is that operating conditions and public standards of service have undergone tremendously rapid changes in a few years, making it very difficult to meet the requirements with existing equipment. Unfortunately, there is scarcity of money with which to buy new equipment, but such money as is available is being spent more intelligently than ever before. To this end electric railway operation is being analysed as never before, and promising economies are constantly being discovered.

Moreover, the public, through its representatives, is permitting the introduction of economies that would not have been tolerated in peace times. If a public body or official can be shown that a proposed practice will directly or indirectly contribute to the conservation of our war resources, the chances are that this practice will be approved and even encouraged. It is reasonable to assume that privileges granted under stress of war will not be withdrawn afterwards if they are proved not to conflict with public interest. The conditions thus outlined are very difficult, but they need not be discouraging. The present, however, is no time for either timidity or discouragement on the one hand, or, on the other, for complacency or indifference to the seriousness of the situation which confronts us.

TRAMWAYS (BOARD OF TRADE) COMMITTEE.

The first meeting of the local advisory committee, No. 2 South-east and South Coast area, was held at Portsmouth on Wednesday, March 27, the chairman, Mr. W. R. Spaven, presiding, when more than half of the members were present. The tramways included in the area are as follows :—

Bournemouth Corporation Tramways.
Brighton Corporation Tramways.
Dover Corporation Tramways.
Maidstone Corporation Tramways.
Portsmouth Corporation Tramways.
Reading Corporation Tramways.
Southampton Corporation Tramways.
Chatham and District Light Railways Co.
Gosport and Fareham Tramways.
Gravesend and Northfleet Electric Tramways, Ltd.
Hastings and District Electric Tramways Co., Ltd.
Isle of Thanet Electric Tramways and Lighting Co., Ltd.
Portsdown and Horndean Light Railway.
Sheerness and District Electric Power and Traction Co., Ltd.

Mr. W. T. Robson, the honorary secretary, informs us that a resolution was unanimously passed and telegraphed to the Board of Trade asking for statutory powers to increase fares because of extra cost of wages and materials. A deputation was appointed to wait on the Board of Trade in connection with the shortage of paper for tramway tickets. In the early days of the war the Board of Trade urged upon tramway undertakings the necessity of training women for all branches of tramway work—as drivers, cleaners, etc. This was emphasised, as all male employees of any age may be taken by the Government. The Committee propose to discourage pleasure traffic on the cars as much as possible. The members of the committee were entertained by Councillor J. Timpson, chairman of the Portsmouth Corporation Tramways Committee. Future meetings will be held in London, the next one having been called for April 10.

MISCELLANEOUS NEWS AND NOTES.

Tramway Profits at Bolton.—The Finance Committee has asked the Tramways Committee to appropriate £15,500 toward the relief of rates.

State Control of Oil Production.—The Empire Resources Development Committee favours State development and intercontrol of the oil fuel resources of the United Kingdom.

The Mersey Railway Company is reported to be in negotiation for a site for the erection of one of the super-power generating stations suggested by the Ministry of Reconstruction Coal Conservation Committee.

Strike at Doncaster Ended.—Doncaster Corporation tramway employees who had been on strike resumed work on April 1, and the usual tramway services were restored the following day, after a cessation of a fortnight.

An Accident at Gateshead.—A car was proceeding up West Street, Gateshead, on March 25, when after a stoppage it ran away backwards down the hill. It ended by running into a stationary car. Several passengers were injured, but none seriously.

Fire on London Tramway Car.—A tramway car with a trailer attached proceeding from New Cross to Blackfriars caught fire on the morning of April 3, and had to be shunted at the Elephant and Castle. Both vehicles were crowded with passengers. The fire, which was put out by means of sand, was confined to the conductor's platform.

New Italian Enterprise.—With an initial capital of 100,000 lire the Societa Elettrificazione Ferovie del Mezzogiorno, Roma, has been formed. Its objects are the carrying out and working of generating plants, and transmission and distribution of electrical energy for all purposes, but more particularly for electric railway traction.

Halifax Corporation Omnibuses.—The earnings of the motor omnibuses run by the Halifax Corporation tramways department show a small increase. For the 300 days ended March 26 the total receipts amounted to £2,551, an increase of £30, although the mileage was 47,212, a decrease of 13,092. The receipts per omnibus mile have averaged 12·97d., an increase of 2·94d. The average distance run per gallon was 4·24 miles, a decrease of ·37 miles.

Easter Holiday Traffics.—The tramway receipts for the Easter holidays in the case of a large number of undertakings show a considerable increase. In Manchester the receipts from Good Friday to Easter Monday inclusive amounted to £14,255, an increase of £2,662. In Salford the receipts were £5,045, an increase of £1,184. The receipts at Halifax for the four days ending Easter Monday amounted to £1,953, an increase of £227. At Newcastle the holidays were marred by gloomy weather, but the receipts for Good Friday, Saturday, and Easter Sunday amounted to £3,523, an increase of £1,066.

Value of Waste Paper.—The question of obtaining paper becomes daily more pressing. Mr. Frank S. Lendrum, a waste paper merchant and a member of the Advisory Committee of the Royal Paper Commission, has stated that it was essential that every kind of paper should be saved. Government Departments alone use 2,000 tons of paper in a week, and even the smallest scraps should be saved for the pulping mills. From 60 to 70 per cent. of the paper manufactured at present, he said, is made from repulped material, as the importation of wood pulp has practically ceased. This repulped material is not only used for newspaper and stationery, it is employed to a great extent in munition making and for the manufacture of many hospital appliances. One ton of waste paper makes 15 cwt. of new paper.

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Repairs to Colne Tramways.—At a recent meeting of the Tramways Committee of the Colne Town Council, the town clerk submitted correspondence with the Board of Trade upon the Corporation's application for permission to proceed with the repairs and renewals of the permanent-way, crossings and rolling-stock of the department. The town clerk was instructed to press for the Board's sanction to the proposed works being immediately proceeded with.

Coal Scarcity in Ireland.—Ireland is faced with a scarcity of coal just as the South of England is and for the same reason—the requisitioning of coal-carrying coasting steamers by the Government for other purposes. It is expected that the Dublin Tramway Company will have to reduce their services. Mr. Duke, Chief Secretary for Ireland, has informed a deputation from Dublin Town Council that he hoped ships taken for Government purposes will be replaced by other though smaller vessels.

Earlier Hours in London.—The compulsory closing of entertainments in the Metropolis at 10.30 does not appear to have caused any inconvenience. The most notable effect of the new regulations has been the bringing forward of the evening rush on the tramways, tubes, and suburban railways. It has already been found possible somewhat to reduce the night services on the tubes and District Railway without causing inconvenience to travellers. The hours of the last trains have not been altered, but after 11 o'clock it is probable that some economy in train services can be effected.

London "Safety First" Council.—The President of the Local Government Board (the Rt. Hon. W. Hayes Fisher, M.P.) has consented to become a Vice-President of the London "Safety First" Council. The first of the series of local propaganda meetings will be held at the Lewisham Town Hall, Catford, S.E., on April 12, at 8 p.m. The chair will be taken by the Mayor of Lewisham (Alderman A. Hume Nicholl, J.P.), and Mr. H. E. Blain, joint hon. secretary of the London "Safety First" Council, will deliver an address on "Safety First," illustrated by lantern slides. Mr. W. Joynson-Hicks, M.P., will also speak.

1,500 Volt Railway in Utah.—In the electrification of the Salt Lake, Garfield and Western Railway, which includes about twenty miles of single track, an interesting feature is the use of automatic sub-stations. These are equipped with motor generator sets for supplying power to the overhead lines at 1,500 volts. The energy is purchased from the Utah Light and Traction Company, and is transmitted at a potential of 44,000 volts by a line erected along the side of the track. The cars are equipped with 1,500 volt motors, but can be worked on the 525 volt system of the Utah Light and Traction Company, of Salt Lake City.

Blackburn Tramway Strike Averted.—The threatened strike of a section of Blackburn tramway employees has been averted. Trouble arose owing to a male driver being discharged for refusing to instruct a female in the duties, and some dissatisfaction was also expressed in regard to the payment of war bonuses. At a conference of the parties on March 28, attended by a representative of the Ministry of Labour, the driver tendered a written apology, also stating he was prepared to carry out instructions in future. It was agreed he should be reinstated, and the other matter was referred to a further conference, and if a settlement is not then reached, the question will go to arbitration. The men have withdrawn their notices.

Conductress's Claim against Corporation.—There was an interesting point at issue in a case heard recently at Birmingham County Court, when a conductress sued the Corporation for damages in respect of injuries sustained in alighting from one of its tramcars. It appeared that she had been acting as conductress on this particular car, but had already been relieved, and remained upon it with the intention of alighting at the point nearest to where she lived. In so doing she fell and sustained the injuries which formed the subject of the action, contending that it arose in the course of her employment. The judge, however, held that it did not so arise, and in deciding for the Corporation said that plaintiff's proper course was to have remained on the car until the stopping place was reached, and in choosing to alight beforehand, she acted at her own risk.

Wages in Belfast.—An award by the Committee on Production has been issued in a claim on Belfast Corporation made by the National Amalgamated Union of Labour and the Municipal Employees' Association. The claim was (1) that a bonus equal to the bonus of 12½ per cent. granted to certain munition workers should be given to the members of the unions concerned employed in the tramway department; (2) that a minimum wage advance of 20s. a week should be paid to motormen, conductors, linesmen, various sections of depot workers, and men employed in the car works department, and (3) that a minimum war advance of 21s. a week should be paid to men employed in the Corporation's electricity station. The award of the committee is that the workmen concerned in the tramway department (with certain exceptions) aged 21 years and over, who are paid as plain time workers, will receive a bonus of 12½ per cent. A bonus of 7½ per cent. will be paid to workers in the tramway department of 21 years and over who are pieceworkers or paid on a premium bonus system or any other system of payment by results. The awards do not apply to employees on the traffic staff of the tramway undertaking, whose case is reserved for further consideration. The committee also decide that such an advance shall be paid to the men concerned in the tramway and electricity departments, aged 18 years and over, as shall give them £1 a week over the pre-war rates. In the case of boys and youths under 18, the war wage advances now being paid will be increased by 2s. per week.

The Associated Equipment Company.—The King and Queen on Thursday inspected the motor lorry works of the Associated Equipment Company. They were received by Mr. Z. E. Knapp, general manager, Mr. S. A. Wallace, works manager, Mr. J. P. O'Neille, production engineer, and Mr. C. W. Reeve, works accountant. The area of these works has been more than doubled since the war and the number of workpeople has increased to 3,000, of whom 1,000 are women and girls. The royal visitors inspected the receiving department, the stores, the loading bank, the steel room, the ambulance room, and the rest room. In the erecting department much interest was taken in a time-saving appliance—a moving platform which is driven at a foot per minute and carries the job to the material. A skeleton lorry is placed on one end of the moving platform and by the time the journey is completed the lorry is practically finished. For a long time the output has consisted only of military lorries and now amounts to 125 per week.

Tramway Car Speed.—This country has been very conservative in the restriction of tramway car speed. There is no form of street traffic so safe as the tramway car: it is confined to a particular known direction by its track, and with the best brake equipment it is easily and almost perfectly controlled. Yet with the exception of a few routes, the speed permitted is ridiculously low, entailing an immense waste of travellers' time and high working cost. Public opinion is, however, being modified by familiarity with the higher speed of motor vehicles and there is much complaint of the slow pace of the tramway cars. Our contemporary, *The Surveyor*, for instance, put the following:—"Is it not evident that the speed of tramcars will require to be greatly increased in the future if these vehicles are to be economical to the owners and beneficial to the passengers, especially if housing is to take the line of separate dwelling-houses spread over large areas of our suburbs? Will not this speeding-up of transit form an integral part of all housing schemes in the future?"

PERSONAL.

Mr. G. E. Sendell has retired from the board of the National Steam Car Company.

Mr. A. T. Lambert, tramways manager of Maidstone, has been granted an increase of £100 in salary to £400 a year.

Mr. F. J. B. Hoskens has resigned the managership of Darwen tramways, and a successor is being sought at £250 a year.

Mr. Barnes Kay, manager of Haslingden electricity and tramways department, has been granted an increase in salary.

Mr. J. F. Simpson, tramways engineer and manager of Preston Corporation, has been granted an increase in salary of £100.

Mr. P. Priestley, general manager of Oldham Corporation Tramways, has been appointed deputy general manager of Liverpool Corporation Tramways.

Mr. C. Clarke, general manager of Birkenhead corporation tramways, has been granted an increase of salary from £450 to £500, rising by annual increments of £50 to £650.

Mr. H. P. Stokes, electrical engineer and tramways manager of the Bexley Council, has been granted an increase in salary of £200 per annum, as from January 1, 1918.

Mr. James Makin, of Stoke-on-Trent, has been appointed chief assistant to the Bexley electricity and tramways undertaking, at a commencing salary of £300 per annum.

Mr. J. D. Caird, traffic manager of Halifax Corporation tramways, has been granted leave of absence, his medical adviser having advised that it was necessary for him to have a change of air for several months.

Sergeant-Major G. Thudon, who was formerly in the employ of the Croydon Corporation tramways department, has been awarded the D.C.M. for bravery in carrying eleven wounded men out of action under heavy fire.

Mr. D. L. Rutherford has been appointed locomotive, carriage and wagon superintendent of the Furness Railway, in succession to Mr. W. F. Pettigrew, who has resigned. Mr. Rutherford has been engineer to the Furness Railway since 1909.

Mr. J. S. D. Moffet has declined the appointment of deputy manager of Liverpool Corporation tramways. The Belfast City Council on the advice of the Tramways Committee have unanimously expressed their desire that Mr. Moffet should remain and have altered the terms of his remuneration so that it will shortly amount to £1,200 per annum. It is so seldom that Belfast Corporation are able to agree unanimously upon any subject that their action in this case is a notable testimonial to the success which has attended Mr. Moffet's work in Belfast.

Mr. R. W. Blackwell.—We greatly regret to record the death of Mr. R. W. Blackwell, chairman of R. W. Blackwell & Co., Ltd., the well-known electrical contractors. He was a pioneer in electric traction in this country, and carried out the installation of many of the earliest electric tramways, including Bristol. The company's recent work included the erection of the overhead equipment for the electrified lines of the London, Brighton & South Coast Railway.

Motor Wagons.—The Surrey County Council have decided to purchase a motor lorry at a cost of £970. Rothwell Urban District Council propose to purchase a motor wagon at a cost of £878. Poplar Borough Council will probably purchase another motor wagon at an estimated cost of £1,000.

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FINANCIAL REPORTS AND MEETINGS.

Crompton and Co., Ltd.—The directors are reported to be making an issue of £150,000 6 per cent. first mortgage debentures at 95 per per cent. to replace the existing £100,000 5½ per cent. debentures.

Val de Travers Asphalte Paving.—The directors of the Val de Travers Asphalte Paving Company recommend a further dividend of 4 1-5d. per share, less tax, making 7 1-5d. per share, or 3 per cent. for 1917.

Para Electric Railways and Lighting.—The directors announce a further dividend of 4 per cent. on ordinary shares, making 7 per cent. for year ended November 30, as compared with 6 per cent. last year.

Bombay Tramways.—The directors of the Bombay Electric Supply and Tramways Company recommend a dividend on the ordinary shares at the rate of 10 per cent. for the year 1917, together with a bonus of 4 per cent.

Mirrlees Watson Company's report for the year 1917 states that the credit balance, after deducting depreciation, directors' fees and other provisions, amounts to £32,022; £6,961 was brought forward, making £38,982. The directors recommend a dividend of 10 per cent. and a bonus of 2½ per cent., both less tax, and that £20,000 be transferred to general reserve account, leaving £7,264 to be carried forward.

Lancashire Dynamo and Motor Co.—The report for the year 1916, which has only recently been issued, shows a profit of £29,320, after providing for interest, income tax, and special war expenditure, and including £1,450 brought forward. Dividends and bonus, making 12½ per cent. free of tax for the year, have been paid, the reserve has been increased by £8,000, bringing it to £50,000, and £6,791 has been carried forward.

Gateshead and District Tramways Co.—Mr. H. S. Day, presiding at the annual meeting, said that the results for the year in view of the exceptional circumstances were undoubtedly satisfactory, but the difficulties under which the company were working were increasing owing to the heavy demands for labour and the increased cost of materials. There had been a considerable expansion in traffic during the year, but the expenses had also increased. Of their investments of £60,713, £41,000 was in national securities.

Cammell Laird and Co., Ltd.—The report for the year 1917 states that trading has resulted in a profit of £308,123, or £13,249 less than the previous year, the reduction being due to excess profits duty having been increased from 60 per cent. to 80 per cent. The volume of work turned out is eminently satisfactory, and the results show continued improvement. The profits, after providing special and ordinary depreciation and after paying debenture and bank interest and all charges, amount to £308,123; £92,594 was brought forward, making £400,717. The directors recommend a dividend of 7s. 6d. per share on the ordinary shares, less tax, making 10 per cent. for the year, to appropriate to reserve account £150,000, and to carry forward £74,689.

Leeds Tramways and the Rates.—At a meeting of the Leeds City Council on March 27, Alderman C. H. Wilson moved that the city rate be 10s. 6d. in the £, an increase of 1s. 6d. He said that the main factor in the proposed increase was the very much larger sum, roughly, £200,000 a year, paid in wages. A lively attack was made on Alderman Wilson's proposal in regard to the tramway undertaking. The Tramways Committee estimate their profits at £39,000, but Alderman Wilson put them at £58,000. It was contended that it would be more straightforward if the rates were raised by 1s. 11d. or 2s., in accordance with the necessity. Alderman Wilson denied any intention to raid the tramway reserves, which amount to £106,000. The proposal to increase the rates by 1s. 6d. was carried.

Rate Aid for Rawtenstall.—At a meeting of Rawtenstall Town Council at which the report was presented by the Tramways Committee that £3,000 for tramway purposes should be included in the estimate for the borough rate, Mr. Tomlinson pointed out that the receipts showed increases month by month. He was therefore somewhat puzzled why aid from the rates should be asked. Alderman Coupe, chairman of the Tramways Committee, replied that there were increases in expenditure in all directions. There were increases in wages, in material, and in upkeep. They must have a "stand by" in order that they might keep the track in better order. As a matter of fact the Committee doubted whether the £3,000 they were asking for from the rates would cover what they wanted. The Mayor said that the increase in expenditure over pre-war times was £16,000 per year. The increased revenue would not meet the increased expenditure at all.

Stewarts and Lloyds, Ltd.—The report for the year ended December 31 last states that after again setting aside £100,000 for depreciation and making provision for estimated liability for excess profits duty, net profit amounts to £285,894, against £259,398. The directors place to reserve £100,000 against £60,000, to employees' benefit fund £20,000 (the same), and recommend a dividend of 2s. per share on the deferred shares, free of tax, and bonus of 6d. per share, carrying forward £105,892, against £111,122 a year ago, when the distribution was the same. Application had been made to the Treasury for sanction to issue the balance of the authorised deferred share capital, amounting to 425,000 shares of £1 each, at 20s. per share; the directors have now received sanction. The shares will be offered on June 17 to holders at that date of the deferred shares already issued, in the proportion of one share for every share held, and are to be paid for in full on July 1.

L.C.C Traffic Receipts.—The traffic receipts for the week ended March 31 amounted to £57,079, an increase of £9,695, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to March 31 (fifty-two weeks) the total receipts were £2,865,311, an increase of £396,889 on the corresponding period of 1917.

United Steel Combine.—The amalgamation of Samuel Fox and Company, Steel Peech and Tozer, the Workington Iron and Steel Company and the Rother Vale Collieries creates one of the largest combines in the steel and iron trades, the share and loan capital amounting to £10,180,000. In addition the Frodingham Iron and Steel Company and the Appleby Iron Company are also included, as Fox and Company and Steel Peech and Tozer already control these concerns. The preliminary arrangement between Fox and Company and Steel Peech and Tozer was made as long ago as last November, but the completion of the scheme has been delayed so as to bring in the other undertakings mentioned.—*Financial Times.*

Bristol Tramways and Carriage Company.—Moving the adoption of the directors' report (a summary of which has already appeared in our pages), Mr. Samuel White, at the meeting of this company on March 26, said that they had been devoting themselves to work of a nature altogether outside the ordinary sphere of the company's operations. They had, as a matter of national urgency set aside the great bulk of their ordinary affairs indoors as distinct from the traffic in the streets. They had been devoting themselves to the execution of national work of the greatest possible urgency and importance, and it was increasing in size. The censor would not allow him to go into details of their output. Last year he reported that they did in 1916 twice or three times as much as in 1915. That day he was able to say that in 1917 they had carried out from twice to three times as much of that class of work as they did in 1916. Having reviewed the details of the accounts, he proposed a dividend of 7½ per cent., tax free, with £30,000 carried to reserve, and £18,152 carried forward.

Southampton Tramway Finance.—Alderman Hollis, moving the adoption of the borough rate at a meeting of Southampton Town Council, mentioned that the estimated expenditure on the tramways a year ago was £69,266, the actual amount expended being £77,374. The estimated income a year ago was £86,600, but this actually realised £110,483. The balance carried forward to meet interest and sinking fund charges, estimated at £17,334, realised £33,109, £18,246 being required, leaving a balance of £15,024 to be transferred to the depreciation and renewal fund. The Tramways Committee had decided to contribute £7,920 towards the reduction of the rates, which was equivalent to a threepenny rate. They proposed to transfer £379 to the tramway third party insurance fund, making the total standing to the credit of that fund £5,000, the remaining balance of £6,825 being placed to the credit of the depreciation and renewals fund, bringing that fund up to £24,287. The Tramways Committee had arranged for the purchase of six additional cars from the London County Council at an estimated cost of £4,000, and had adopted the policy of paying this sum out of the depreciation and renewal fund. The amount standing to the credit of the latter fund would thus be over £20,000, a record in the history of the tramway undertaking. The expenditure for the coming year was estimated at £92,964, being an increase of £15,590 over last year's working expenses, while under the head of income the Committee anticipated to receive £112,150, or an increase of only £1,665 over last year's results, leaving a gross profit of £19,186, against £33,109. It was estimated, after providing for the sinking fund charges, that there would be a balance of £1,150 to be transferred to the depreciation and renewal account.

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ABCHURCH YARD, CANNON STREET,
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Complete Equipment
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at home and abroad

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash April 4 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	67½	68
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅞	56/3	52/6
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4⅞	46/10½	46/10½
4%	4%	Do. 4% Deb.	100	91	65½	65½
4½%	4½%	Do. 4½% Deb.	100	98½	68	68
5%	5%	Do. 5% Deb.	100	96	65½	65½
—	—	Associated Omnibus Co., Ord. ..	5/-		1/2	1/2
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	105⅛	104
—	1/-	Bath Electric Trams Pref. Ord.	1	½	3/1½	3/4½
6d.	6d.	Do. 5% Cum. Pref. ..	1		10/9	10/6
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77¼	77¼
14/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23	23
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11⅛	£9/18/-	£9/18/-
4½%	4½%	Do. 4½% Deb.	100	96	74	74½
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	42½	42½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	88½	88½
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5½	5½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91½	91
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	26¾	27
6%	5%	Do. Pref. Ord.	100	106	32	32½
5%	5%	Do. 5% Cum. Pref. ..	100	103	52½	52½
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	83½	85
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	59½	59½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	31	32½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	73	73½
5%	5%	Do. 5% Deb.	100	92	78½	78½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	70	70
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	7	6½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1		12/3	12/3
1/3	1/3	City of B. A. Trams	5	5½	81/-	81/-
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	82½	82½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7	7
6/-	6/-	Do. 6% Pref.	10	12	10½	10½
—	—	Hastings & Dis. Elec. Tram Ord.	10/-		1/3	1/6
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1		10/6	10/6
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
1/1½	5½d.	Hong Kong Tramway	5/-		17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1		2/4½	2/4½
6/6	6/6	Lanarkshire Trams Co. ..	10	10½	10	10
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79½
9d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1		1/6	1/6
6d.	6d.	Do. 5% Pref.	1		5/-	5/-
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	60½	59
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80½	80½
5%	5%	Do. 5% Inc. Deb.	100	88½	77	76½
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	38½	39½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	84½	84½
7½d.%*	9½d.*	Manaos Trams & Ltg. Ord. ..	1		3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	70	70
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	73½	73⅜
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70½	70½
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	24½	26½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	35½	36⅜
—	—	Do. 6% Mt. Bds. ..	100	76	30	25½
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	88½	88½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	93½
2/-	1/2½*	National Steam Car	1		17/1½	17/3
9d.*	9½d.*	New General Traction	1	⅛	7/3	7/3
8½d.	6d.	Northern Gen. Trans. Ord. ..	1		12/9½	12/9½
3/-	4/-	Para Elec. Rlys. Ord.	5	4½	76/3	78/9
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	7/1½	7/1½
—	—	Do. 7% Non. Cm. Part Pf.	1	—	13/10½	13/10½
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1		6/6	6/6
6d.	6d.	Do. 5% Pref.	1		12/1½	12/1½
8d	1/4	Provincial Trams. Ord. ..	1	¼	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	87½	87½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	71½	74½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86½	86½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	72	72
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/3	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	92	92
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77½	77½
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	32/6	32/6
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	69	66
—	—	Yorks (W.R.) Elec. Trams. Ord.	5		18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5		84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	72	76½
—	—	Metropolitan Dist. Ord. ..	100	21½	14	13½
—	—	Undgd. Elec. Rys. of London ..	10	21½	30/-	30/-
—	—	Do. "A"	1/-		4/10½	4/9
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	103½	103½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	100	99½
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	77½	78

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C. ..	Mar. 26	421	497	+ 76	51	23,168	+ 2,650
Aberdeen Corporation ..	„ 29	1,794	2,257	+ 463	43	93,526	+ 12,551
Ayr Corporation	„ 30	262	366	+ 104	46	20,557	+ 2,851
Belfast City	„ 29	5,488	7,812	+ 2,324	52	349,232	+ 54,744
Birkenhead Corporation ..	„ 31	1,537	1,998	+ 461	52	96,686	+ 16,762
Birmingham Corporation do. Motor Omnibuses ..	„ 23	16,427	20,749	+ 4,322	51	960,251	+ 147,035
Blackburn Corporation ..	Feb. 6	960	1,571	+ 611	45⅔	67,531	+ 11,857
Bournemouth Corporation	April 3	1,771	3,365	+ 1,594	52	132,428	+ 18,179
Bradford Corporation ..	Mar. 23	6,454	4,986	— 1,468	51	384,380	+ 42,607
Burnley Corporation ..	„ 30	1,544	2,444	+ 900	..	..	..
Burton-on-Trent Cor. ..	„ 31	250	383	+ 133	52	17,129	+ 2,786
Bury Corporation	„ 31	1,117	1,981	+ 864	52	85,778	+ 12,650
Chatham & District ..	„ 21	1,146	1,164	+ 18	12	12,991	+ 439
Cork Electric	„ 21	495	655	+ 160	12	6,613	+ 1,409
Derby Corporation ..	„ 30	991	1,355	+ 364	52	63,804	+ 6,320
Dublin United	„ 1	5,941	7,305	+ 1,364	9	61,814	+ 11,088
Dundee City	„ 27	1,320	1,632	+ 312	45½	70,788	+ 8,581
East Ham Corporation ..	„ 30	1,210	1,367	+ 157	52	70,740	+ 5,099
Exeter Corporation ..	„ 22	302	373	+ 71	51	20,106	+ 301
Glasgow Corporation ..	„ 30	24,362	27,691	+ 3,329	43⅔	1,149,600	+ 131,277
Glossop (U.E. Sup. Co.) ..	„ 23	129	186	+ 57	12	2,128	+ 627
Halifax Corporation ..	„ 26	1,915	2,648	+ 733	51⅔	124,380	+ 13,918
do. Motor Buses ..	„ 26	48	57	+ 9	51⅔	2,551	+ 30
Hastings and District ..	„ 18	968	1,093	+ 125	11	10,521	+ 841
Huddersfield Corporation ..	„ 30	2,686	3,307	+ 621	52	166,745	+ 21,701
Ilford U.D. Council ..	„ 30	608	839	+ 231	52	40,039	+ 5,671
Ipswich Corporation ..	„ 30	362	683	+ 321	52	34,234	+ 9,092
Isle of Thanet	„ 30	223	218	— 5	26	4,540	— 1,283
Kilmarnock Corporation	„ 30	170	235	+ 65	45⅓	9,489	+ 1,544
Lanarkshire	„ 21	2,442	3,457	+ 1,015	12	35,884	+ 8,079
Lancashire United ..	„ 27	1,880	2,682	+ 802	13	31,147	+ 9,539
Leeds City	„ 30	9,517	11,260	+ 1,743	52	574,801	+ 69,840
Leicester Corporation ..	„ 30	3,201	4,435	+ 1,234	..	..	..
Leyton U.D. Council ..	„ 28	1,603	1,921	+ 318	52	96,425	+ 13,294
Liverpool Corporation ..	„ 30	14,294	17,198	+ 2,904	12⅔	211,315	+ 33,147
Llandudno & Colwyn Bay ..	„ 22	194	272	+ 78	16	3,805	+ 836
London County Council ..	April 3	47,384	57,079	+ 9,695	52	2,865,311	+ 396,889
Maidstone Corporation ..	Mar. 31	255	384	+ 129	52	12,881	+ 1,932
Manchester Corporation	„ 30	18,345	24,366	+ 6,021	52	1,114,045	+ 147,750
Nelson Corporation	„ 16	194	244	+ 50	50	11,869	+ 1,394
Newcastle-on-Tyne Cor.	„ 30	6,957	8,807	+ 1,850	52	416,192	+ 65,622
New St. Helens & Dist. ..	„ 27	1,032	1,429	+ 397	39	53,906	+ 12,676
Northampton Cor.	„ 29	683	947	+ 264	52	44,380	+ 7,262
Nottingham Corporation	„ 28	3,780	5,150	+ 1,370	52	235,484	+ 34,690
Oldham Corporation ..	„ 31	2,177	3,209	+ 1,032	1	3,209	—
Portsmouth Corporation	„ 10	2,035	2,581	+ 546	..	..	..
Provincial	Jan. 26	1,750	2,479	+ 729	16⅔	39,274	+ 5,560
Reading Corporation ..	Mar. 28	813	1,253	+ 440	52	55,829	+ 11,660
Rhondda Tramways ..	„ 21	1,374	1,622	+ 247	12	17,817	+ 3,088
Rotherham Corporation	„ 27	1,629	2,046	+ 417	52⅓	95,497	+ 14,581
Sheffield Corporation ..	„ 31	10,725	12,784	+ 2,059	⅔	10,807	+ 1,735
Southampton Cor.	„ 27	1,545	2,362	+ 816	51⅓	108,568	+ 23,089
Southend-on-Sea Cor. ..	„ 20	641	676	+ 35	51	43,559	— 507
South Shields Cor. ..	„ 23	821	1,076	+ 255	51	49,741	+ 7,120
Sunderland Corporation..	„ 31	1,410	2,021	+ 611	52	97,921	+ 12,719
Sunderland District ..	„ 27	599	901	+ 302	21	17,232	+ 4,174
Swindon Corporation ..	„ 20	216	284	+ 68	50⅓	13,918	+ 3,500
Torquay Tramways ..	„ 21	509	755	+ 246	12	7,609	+ 2,415
Tyneside Trys. & Trmrds.	„ 13	633	895	+ 261	11	8,502	+ 2,168
Wallasey Corporation ..	„ 30	1,195	1,648	+ 453	52	81,057	+ 11,880
Walsall Corporation ..	„ 30	803	1,387	+ 584	52	53,117	+ 1,067
Walthamstow U.D. Coun.	„ 31	1,029	1,318	+ 289	52	63,440	+ 8,365
Warrington Corporation	„ 21	494	725	+ 231	51	31,239	+ 5,821
West Ham Corporation	„ 28	3,192	3,905	+ 713	51⅓	189,241	+ 24,867
Wigan Corporation ..	„ 28	1,710	2,355	+ 645	51⅓	107,260	+ 20,015
Yorkshire (West Riding)	„ 31	1,766	2,343	+ 577	13	30,437	+ 7,168

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War :—Accrington, Bath, Blackpool, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Apr. 1	£52,762	£53,346	13	£704,907	+ £44,354
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Dec. 20	3,981	4,127	40	32,971	+ 360
Brazilian Traction (Mlrs.)	Jan.	7,266,000	7,837,000	4	7,837,000	+ 571,000
Brisbane	Feb.	29,800	32,009	8	66,509	+ 3,689
British Columbia .. $	Jan.	493,215	559,569	30	3,483,229	+ 324,529
Buenos Aires Lacroze ..	Feb.	35,977	34,397	34	303,775	— 1,239
Burmah Tram. & Light Rs.	Feb.	22,912	22,985	30	184,236	+ 217
Calcutta .. .. Rs.	Mar. 30	63,517	64,889	13	920,876	+ 43,671
Cape Town	Jan.	18,440	19,707	..	..	..
Carthagena and Herrerias	Mar.	2,955	5,316	13	13,358	+ 3,198
Cordoba	Jan.	12,432	12,845	13	134,966	— 641
East India	Feb.	1,570	1,318	30	8,767	— ,826
Hong Kong .. .. $	Feb. 16	12,514	18,149	7	94,318	+ 102
Kalgoorlie	Nov.	2,555	2,641	47	29,564	+ 1,026
La Plata	Mar.	4,523	5,347	13	4,803	+ 1,867
Lima	Jan.	36,841	43,536	4	43,536	+ 6,695
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Feb. 28	28,511	33,553	34	149,194	+ 15,257
Manaos	Nov.	142,853	146,047	..	..	..
Manila .. .. $	June	59,432	73,900	..	..	..
Montevideo	Feb.	32,304	34,573	17	135,674	+ 10,261
Pernambuco	Mar. 31	3,513	4,341	13	60,384	+ 14,213
Peruvian .. .. $	Feb.	844,770	925,410	34	8,203,030	+ 917,638
Port Elizabeth	Jan	4,498	4,779	..	..	..
Rangoon	Feb.	4,605	5,662	8	11,023	+ 1,785
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Jan. 26	14,971	12,356	4	48,396	— 4,395
Toronto .. .. $	Jan.	1,002,469	1,068,319	4	1,068,319	+ 65,850
Winnipeg .. .. $	Jan.	319,945	334,642	4	334,642	+ 14,697

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CONTRACTS AND ORDERS.

Glasgow Tramways Committee has accepted the tender of Messrs. Thomas Bolton and Sons for rail bonds.

J. W. Courtenay, Ltd., of Amberley House, Norfolk Street, London, W.C. have been appointed sole advertising contractors to Coventry Corporation tramways.

The British Thomson-Houston Company's tender has been accepted by Derby Electricity Committee for switchgear for a 4,000 kw. turbine, two feeder panels, and inter-connection switchgear.

Electromobile (Leeds), Ltd., Neville Street, Leeds, are supplying two 3½-ton tipping wagons to Bootle Corporation, and one 2-ton chassis for Oldham Corporation, to be fitted with an omnibus body. In a reference to these orders in our issue of March 23 there was a slight inaccuracy.

Orders for Electric Vehicles.—Rochdale Corporation has applied to the Local Government Board for sanction of a loan for the purchase of three electric tipping wagons. Derby Corporation has accepted the tender of the General Vehicle Company for two G.V. electric tipping vans, at £2,810. Bolton Corporation Cleansing and Sewage Committee have ordered from Drake and Gorham, Ltd., an electric wagon. Kesteven County Council has been given permission by the Control Board to purchase a tipping wagon at an estimated cost of £993. The West Norfolk Highways Committee have accepted the tender of the Eagle Engineering Company, of Warwick, for two 5-ton side tipping wagons, and that of Messrs. Charles Burrell and Sons, Thetford, for a 5-ton steam tractor

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"Follow my leader" policy—Importance of local conditions—Effect on sub-soil—Standard methods—Transverse sleeper tracks—Effect of vehicular traffic and tramway car traffic.

CHAPTER V.—RAIL PACKING.
Pitch and tar packing—Materials—Testing and preparation of materials—Prepared tar—Pitch mixtures—Movement of rails—Packing and floating.

CHAPTER VI.—RAIL LAYING.
Bad rail packing—Rails canted or twisted—Anchoring and Padding—Rail expansion and contraction—Curving of rails—Springing of rails—Anchoring tracks.

CHAPTER VII.—JOINTS, FISH PLATES, BOLTS AND NUTS
Why joints fail—Dished or hammered joints—Movement at joints.

CHAPTER VIII.—JOINT WELDING.
Methods of welding—Thermit welding—Electric arc welding process—Expansion and contraction—Oxy-acetylene process.

CHAPTER IX.—RAIL WEAR.
At joints—On new tracks—On steep gradients—On wheel tires—Contact of wheel and tire—Leeds special rail section—Railway rails—Depression of check.

CHAPTER X.—COMPOSITION AND MANUFACTURE OF TRAMWAY RAILS AND RAIL WEAR.
Defective rails—Composition of rails—Standard specification—Basic and acid Bessemer process—Sandberg process—Analysis of rails and rail tests—Drop test unnecessary.

CHAPTER XI.—CORROSION OF TRAMWAY RAILS.
Causes of rail corrosion—Exposure to sea water—Effect of corrosive liquid.

CHAPTER XII.—TRACK PAVING.
Effect of vehicular traffic—Cause of loose rails—Importance of quality in setts—Square-dressed setts—Nidged granite setts—Bonawe granite setts—Wood paving—Bedding of setts—Laying and ramming.

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Removal of tracks—Temporary tracks.

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Rail cleaning—Rail grinding—Rail planing.

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THE Tramway & Railway World
WITH MOTOR TRAFFIC SECTION

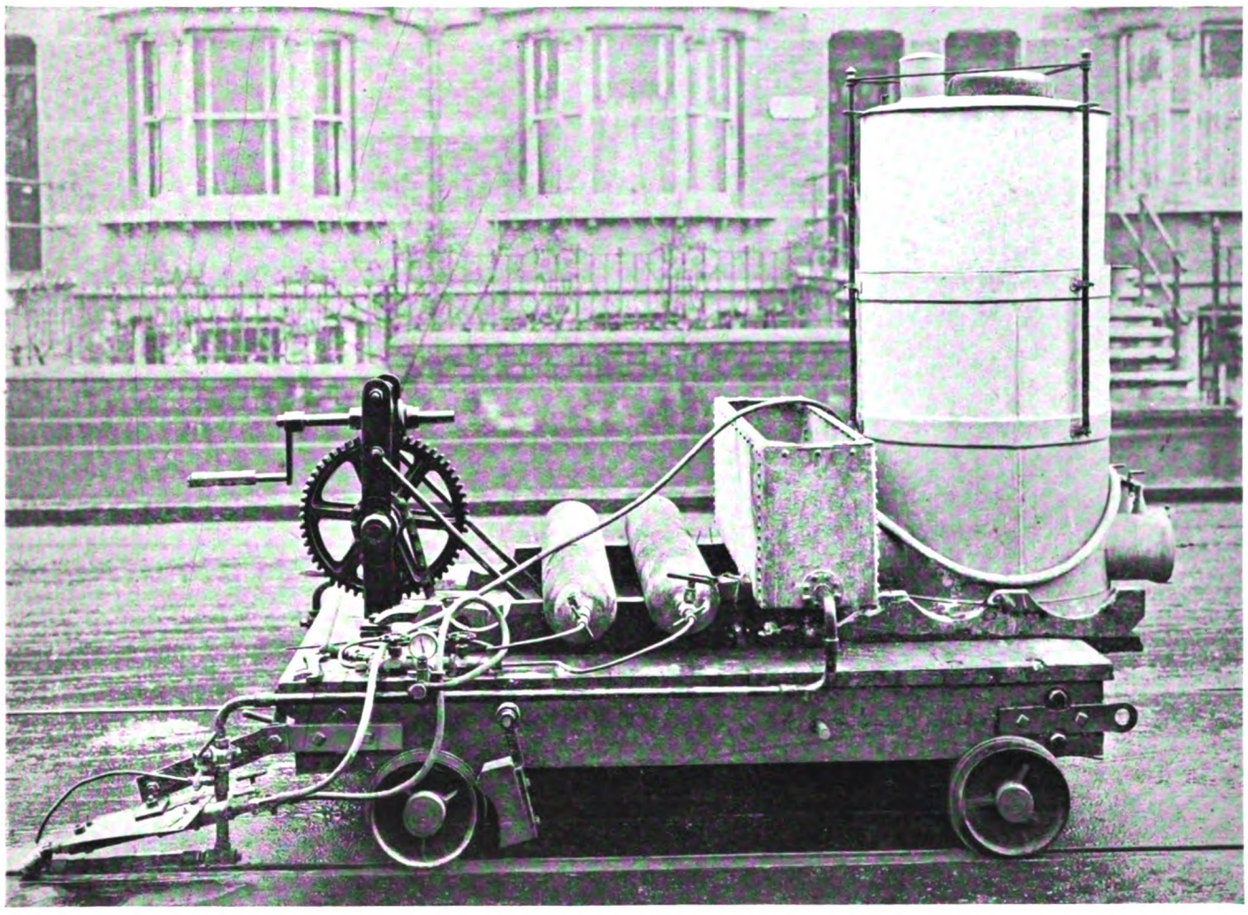
Founded 1892. LONDON, APRIL 11, 1918. VOL. XLIII.

A METHOD OF HARDENING TRAMWAY RAILS.

APPLICATION ON CROYDON CORPORATION TRAMWAYS.

The name of Sandberg has become well known in tramway practice during the last few years, firstly by reason of its association with silicon rails, which have been so successfully employed on many tramway systems throughout the world, and later by the development of sorbitic steel, which is of profound interest to all users of rails both for tramway or railway purposes. The value of the Sandberg treatment which produces a sorbitic structure, can be obtained only in the case of new rails, and as the tramway undertakings know to their cost, new rails are to-day practically unprocurable, and hence the use of the true sorbitic rail so far as tramways are concerned must be necessarily deferred until rails are available.

In the meantime, the deterioration of permanent way on tramways is continuing at a very rapid rate, and the position has become so alarming that the attention of the Board of Trade is being seriously directed to means by which the most important tramway systems in the country can be maintained in such a condition as to continue to give a reasonable service. Not only, however, is there a very marked shortage of rails, but even if they could be obtained there is extreme difficulty in securing the necessary labour for reconstruction.



Apparatus Used on Croydon Tramways for Treating Rails by the Sandberg Sorbitic Process.

Another point of the utmost importance, and one which must enter into the calculations of tramway managers in the future, is that the cost of reconstruction is now so high that the financial operation of tramways must be placed on an entirely new basis. From recent experience it has been found that the present cost of reconstruction as compared with that in the year 1911 has gone up from three to four times. Having

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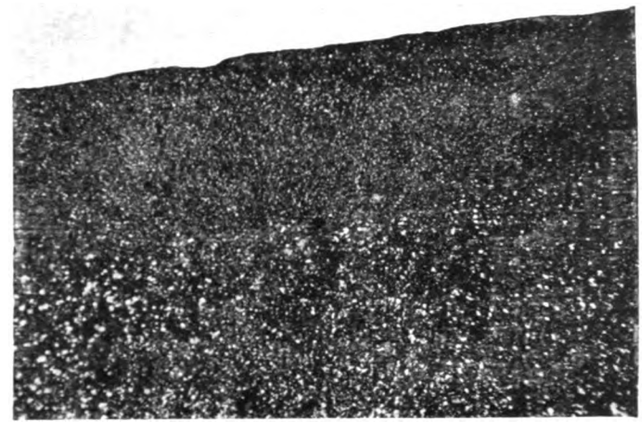
regard, therefore, to the conditions which at present prevail, any method or process which will prolong the life of the track must be of enormous importance, not only from the point of view of individual tramways but more especially from the national standpoint.

What may be in a sense considered a revolutionary development in the treatment of rails is that which has been patented and developed by Mr. C. P. Sandberg, which consists in the hardening of rails *in situ* and has been recently put into actual practice by the Sandberg Sorbitic Steel Company. It is perhaps a somewhat daring innovation to treat rails lying in the ground, because any method of hardening involves some form of heat treatment, and while this may be of a comparatively simple character in the rolling mills it obviously involves a somewhat new problem if the heat treatment is applied to rails in position. The process, which is patented, has been carefully developed until it can be claimed to be thoroughly practical. While experimental work has been carried on for some time on the Leeds Corporation Tramways and elsewhere, the application of the Sandberg treatment to rails *in situ* at Croydon is the first application under working conditions, and as the treatment is being employed somewhat extensively by the Croydon Corporation Tramways it will be useful to describe some of the main features.

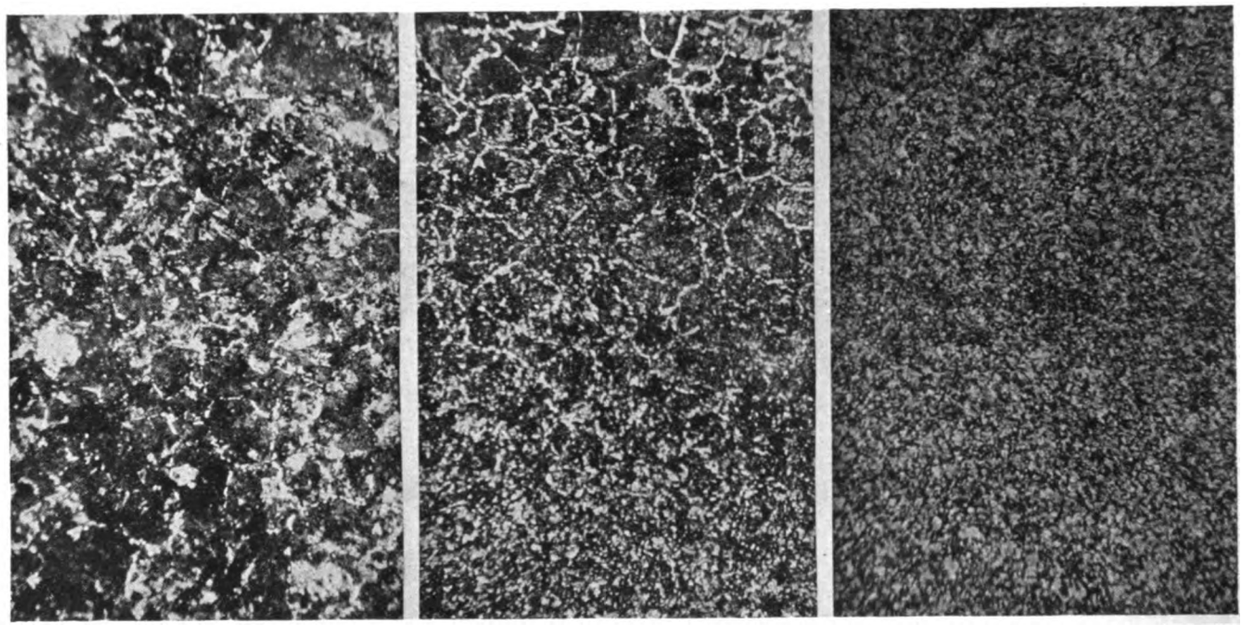
Obviously the invention must necessarily include means by which the treatment of the rail is effected progressively. The patent claims the hardening or tempering of the head or surfaces of rails, switches, points of crossings, by heating them in continuous succession and subsequently quenching or cooling them moderately quickly in order to produce the hardness or temper desired. This is accomplished by causing a flame or flames to move slowly along the tread of the rail, and this method has been applied on the Croydon Corporation Tramways. Mr. E. F. Morgan, the borough road surveyor of Croydon, after investigation into the Sandberg system of treatment *in situ*, decided to apply the method to a portion of the tramway rails, and the work of hardening the rails as well as joints has been now carried on for some time past.



Section of Tramway Rail Head, After Treatment, Showing Depth of Hardening.
(Magnified five times.)

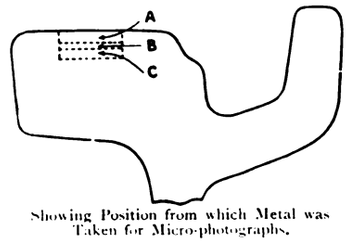
While the treatment constitutes a striking departure from existing practice, the method of application is a good deal simpler than might be at first thought possible. The application of a somewhat intense heat to the surface of a tramway rail might give rise to doubt as to what effect the heat would have on the surrounding pavement, for it has to be borne in mind that the treatment is carried out without any disturbance whatever of the permanent way. It was at first thought desirable to protect the pavement against the flame, but experience showed that it was not even necessary to provide any form of protection for the reason that the heat is too local to cause any damage.

From the micro-photographs which have been obtained of the Croydon rails, it appears that the hardening is carried out to a considerable depth, and obviously if the heat treatment can produce a hard head it is bound to involve a considerable increase in the life of the rail as the wear must be retarded.



C—Normal. B—Intermediate. A—Hardened.

Micro-photographs of a Steel Tramway Rail Showing Effect of Sandberg Sorbitic Treatment.



Showing Position from which Metal was Taken for Micro-photographs.

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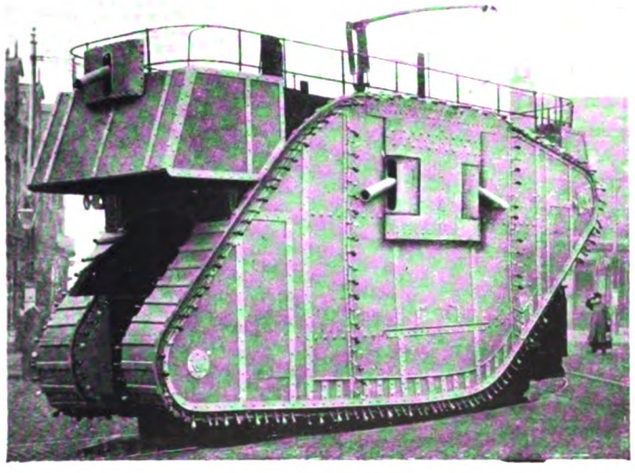
In addition to treating the whole length of rail in order to retard wear, there are many cases where the most serious trouble on tramway permanent way arises at the joints. In other words, the rail generally speaking will attain a fairly long life without any hardening treatment, but the battering of the joints which is set up by the deterioration of the permanent way at this point has such effect on the rail ends as either to render the rails useless or to make it necessary to cut them at the ends and to insert new short lengths.

It is under conditions of battering that the Sandberg treatment has proved to be remarkably efficacious. While it does not stop the knocking at the joints, the system can be used to harden the rail ends to such an extent that the effect of battering is very much reduced. It has been found at Croydon that the treatment of the rail ends has produced hardening to a very marked degree, and while the micro-photographs demonstrate this very clearly, there is ocular evidence that a change in structure has taken place because after a short period the rail ends become highly polished like manganese points.

The treatment of the rails at Croydon is accomplished by means of a special travelling truck on which is mounted the apparatus to provide means of heating as well as cooling. The source of heat is an oxy-acetylene flame, the acetylene generator and oxygen cylinders being carried on the truck as shown in the accompanying illustration, a tank being also provided to furnish water for cooling. By means of a geared hand wheel the truck can be moved at a certain definite rate. The truck is the first of its type, and others that are now being designed are larger and will include modifications which will increase the efficiency of the plant. While oxy-acetylene is used in the case of the Croydon treatment, it is of course possible to use other forms of heating.

TRAMWAY CAR AS "TANK."

Tramway undertakings have rendered valuable aid to the prosecution of the war by stimulating recruiting and the provision of comforts. Although the former work has not been necessary since the institution of compulsory service, numerous tramway undertakings have continued their war activities by means of campaigns to encourage people in saving money for investment in the War Loans. Perhaps the most enterprising instance of this work has to be credited to the Liverpool Corporation Tramways Department, who during the recent War Bonds campaign by means of "tanks," fitted up a single truck tramway car as a "tank." The disguised vehicle proved very effective as an office wherein subscriptions could be paid, and its utility was as marked by night as by day. This was accomplished by the outlines of the "tank" being picked out with electric lamps, as shown in the illustration.



TRAMWAY CARS WITHOUT SEATS.

In these days of abbreviated services and extra crowded rush hours it is a common experience for a passenger to make the journey "straphanger" fashion. The tramways company of Rome has met the situation boldly by putting into operation upon some of its routes a certain number of entirely seatless cars—both motor and trail cars—which will be experimented with for some time in order to gauge the results, both economic and social, before taking their places definitely and permanently in the company's rolling stock.

Interior View of Car for Standing Passengers.

These cars are, as will be seen from the accompanying illustrations, of the enclosed type with bowed ends, to which has already been given the name of "torpedo," and accommodate as many as 65 passengers with standing room on the single deck floor.

Passengers enter by the rear platform and descend by the front steps, both on the near side, thus avoiding a good deal of the crush that always occurs when the same platform is used for ingress and exit. The rear platform accommodates 17 persons; the front one only 13, as space must be left (chained off from the rest of floor space) for the motorman. In the body of the car, separated by handrails in sections, are three parallel longitudinal aisles, of which the centre one is kept free for passengers to circulate or pass up to the front when they wish to alight, and also for the conductor to collect fares and control the car.

By sectioning the handrails which partition off these aisles, with different openings or spaces, as will be seen from the plan of the car, the passengers can move about more freely and quickly, not being bunched up all together with only one direction in which to clear themselves until reaching the front steps for exit. The handrails are about 40 inches in height, made of

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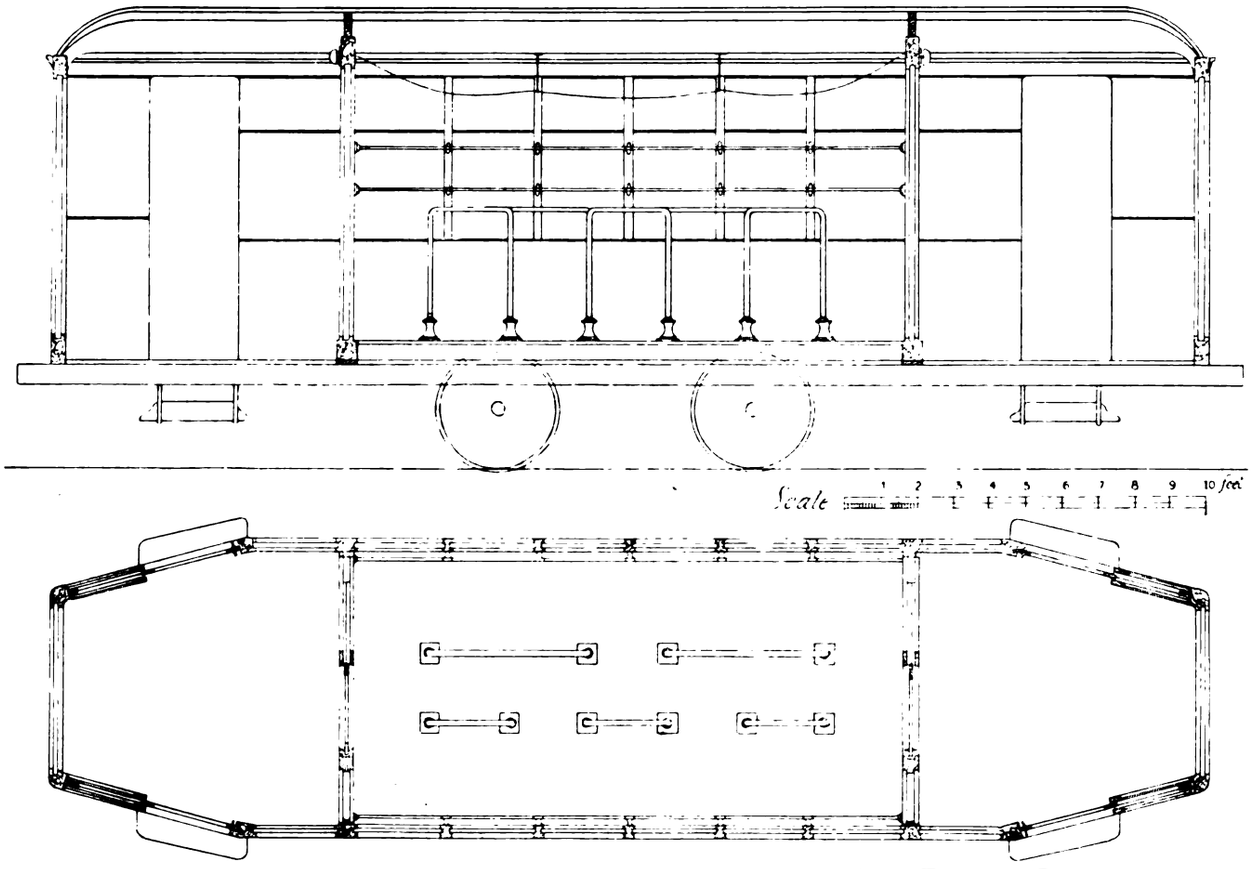
stout steel tubes, screwed into substantial cast-steel sockets on the floor, the latter being bolted to the steel floor joists for strength enough to resist any side pressure from passengers leaning or forced against them. To allow the provision of these floor joists, some modification has been necessary in the flooring.



Plan and Longitudinal Section of Special Car for Munition Workers—Rome Tramways Company.

where inspection doors are required for the motors and gearing.

The outside handrailing—fixed in the ordinary way on seated cars for passengers to rest their hands or arms upon, when the windows are open in summer—are replaced in the "standing cars" by a couple of similar light handrails fixed inside much higher up: this is found to be useful in putting an end to a very bad and dangerous practice that has come into use with the ordinary seated car, when large crowds have to be handled, and it is customary for would-be passengers unable to get into the car to hang on the outside, grasping by hand the external handrail, with a precarious foothold on axlebox or side frame or any part of the undergear where a slight projection may be found of service.

The new type of car is clearly marked on the vestibule at each end—"Standing places only."

The question of adequate springing is one that has had to be carefully thought out, in view of the considerable extra weight of passengers to be carried. Reckoning at least 16 additional persons at an average of 140 lbs. each, there is over a ton additional load to be borne by four springs. Reinforced springs, however, have overcome any difficulty from this source, the additional springs only coming into play as the load increases above the amount usual in seated cars.

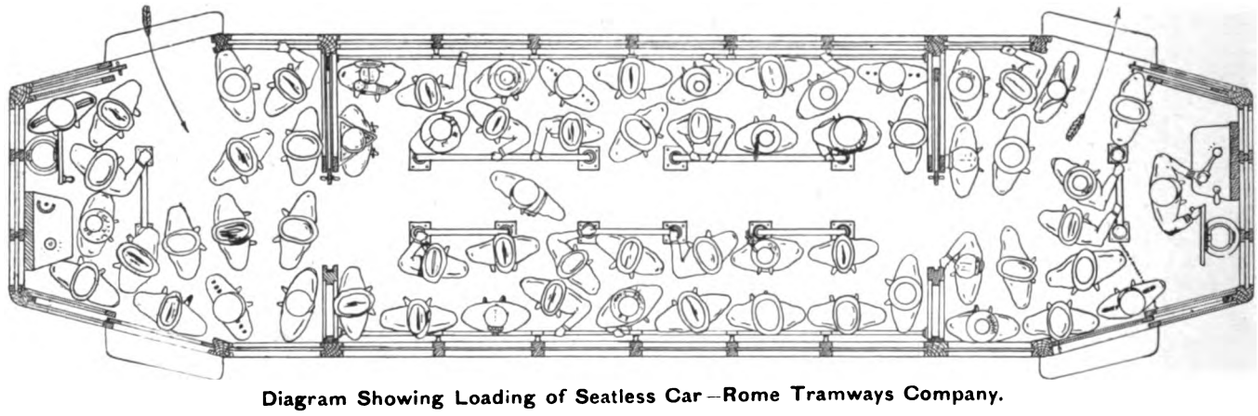


Diagram Showing Loading of Seatless Car—Rome Tramways Company.

The new type of car is to be tried for six months, during which time careful watch will be kept on any incidents occurring that may be due to the special design; and should there be no serious objection found from actual working, the public authorities will give their approval to the continuance of the service and its further extension as the demands of traffic may dictate.

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A LARGE MOTOR CONVERTER.

The 2,000-KW. 50-cycle Peebles motor converter, illustrated below, was recently manufactured for the Sydney Municipal Council, Australia, this making the fourth 50-cycle motor converter unit supplied to that municipality, the other three machines each being of 1,000 KW. capacity. A few years ago Bruce Peebles and Company, Limited, of Edinburgh, the manufacturers of these machines, supplied to the Manchester Corporation a 2,200-KW. 50-cycle motor converter, and since that time, in addition to the 2,000-KW. set shown in the illustration, they have received an order for a 2,000-KW. motor converter (not yet manufactured) for Johannesburg Municipality, and within the past few weeks the Manchester Corporation have placed an order with them for a still larger machine, this time of 2,400-KW. capacity. In connection with these motor converters, it is of interest to note that they are the largest 50-cycle converting units which have ever been manufactured in Great Britain.

The machine shown in the illustration runs at 300 revolutions per minute, and is arranged with three pedestal bearings: the bed plate is split longitudinally, the facings being carefully machined and bolted together. Barring gear is provided for barring round the rotating element for cleaning or other purposes when the machine is not in operation.

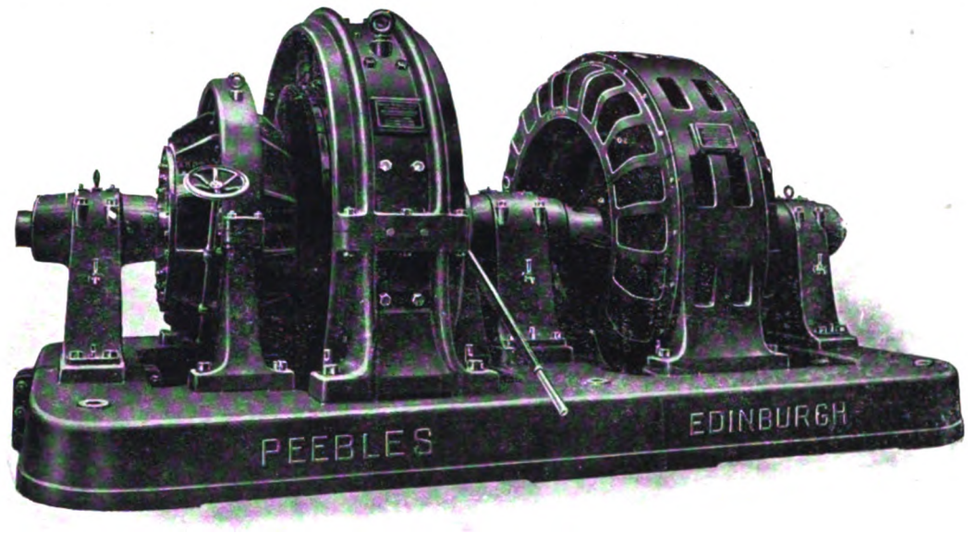
The A.C. supply, which is switched direct on to the stator, is 3-phase 50 cycles 5,000 volts, and the continuous current end, which is shunt wound, gives its output at 485–540 volts. Owing to the heavy continuous current, viz., 425 amperes, the D.C. end—as will be noticed from the picture—has a double commutator, and the brush gear, which is carried from the bedplate, is of particularly substantial construction.

The machine is designed to deal continuously with an out-of-balance current equal to 25 per cent. of normal full load, i.e., about 1,000 amperes, and with this out-of-balance current the voltage difference between the two halves will not be more than 1 per cent. of the voltage across the outers.

This particular set, for special reasons, is started up from the D.C. end by means of a multiple-lever starter, which is short-circuited with a 4,000-amperes heavy laminated short-circuiting switch after the machine has been run up to speed. When it is installed in Sydney the starter will be mounted on the bedplate between the A.C. and D.C. machines, giving a very compact arrangement.

The A.C. rotor is provided with sliprings and the usual short-circuiting gear, which latter is brought into use after the rotating element has commenced to revolve, but in the event of the machine ever having to be started from the A.C. end the sliprings and short-circuiting gear will come into operation in the usual way for A.C. starting. In any case, however, motor converter sliprings are always of small diameter and section, as they are only in use at starting and in three-wire machines to carry collectively the out-of-balance current.

The guaranteed efficiencies are 93·5 per cent. at full load, 93·25 per cent. at three-quarter load, and 92·5 per cent. at half load. The temperature rise will not exceed 70 deg. Fahr. after six hours' full-load run and, when supplied with alternating current at 5,000 volts and with the D.C. voltage at 505, the power factor will be unity at 90 of full load; at 540 volts and full load the power factor will be ·97 leading, while at 485 volts and full load it will be ·98 lagging.



Peebles 2,000-kw. Motor Converter for Sydney.

The whole machine is of very massive and substantial construction and the windings have been specially impregnated to withstand the climatic conditions obtaining in the country where it will operate. The magnet frame is divided horizontally and the complete rotating element very carefully balanced both mechanically and electrically.

It might perhaps be pointed out that the three 1,000-KW. Peebles motor converters, already mentioned as having been supplied to the Sydney Municipality, run at 375 revolutions per minute, and like the 2,000-KW. set are each capable of dealing continuously with 25 per cent. out-of-balance current.

Installed in the same sub-station with two of the 1,000-KW. motor converters are two Peebles synchronous-motor-booster sets. As in the case of the motor converters, the A.C. ends of these machines are supplied with 3-phase current 50 cycles, 5,000 volts, while the D.C. ends are capable of giving 3,000 amperes at 0–187 volts.

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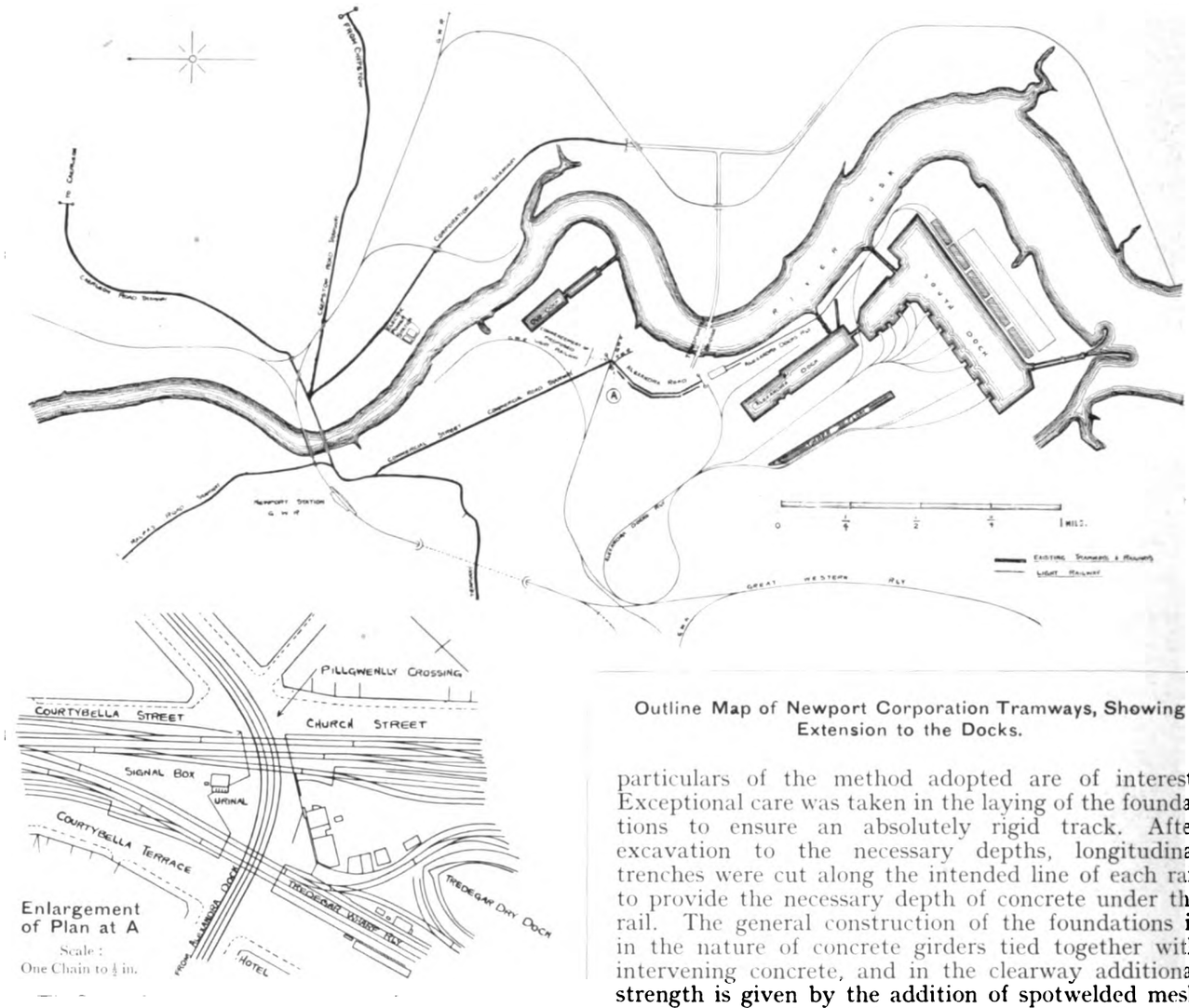
NEWPORT LIGHT RAILWAY.

An Urgent War Time Enterprise.

The Newport Corporation have recently carried out a short but important extension of the tramways system as an urgent war measure. The existing tramways terminated at a considerable distance from the Alexandra Docks area, and in consequence traffic facilities between the docks and the town were very inadequate. With the development of the Dock Company's area for war purposes it became necessary to do something to overcome the existing conditions, especially in the provision of tramway facilities for munition workers. As a result of Government representation, the Corporation undertook to extend the tramways, and form a connection with the railway running over the Dock Company's area.

In view of the urgency of the matter and the necessity of completing the extension as soon as possible, the Corporation applied to the Board of Trade for a Light Railway Order, and the Light Railway Commissioners ultimately conferred the necessary powers upon the Corporation under the Newport Light Railway Order, 1917. The position was further complicated by the fact that it was necessary to cross over the Great Western and Tredegar Estate Railways. As soon as these matters had all been satisfactorily arranged, the Corporation invited tenders for the construction of the line, but ultimately, on the advice of the Borough Electrical and Tramways Engineer, they decided to carry it out by direct labour. Construction was actually begun on July 13, 1917. It was hardly anticipated that the extension would be available before Christmas, 1917, but notwithstanding the inevitable difficulties and delays in obtaining material, and the lack of efficient labour and bad weather, such good progress was made that the line was completed and available for service by November 29, 1917.

Having regard to the nature of the sub-soil, it was necessary to give special consideration to the construction of the track, and the following brief particulars of the method adopted are of interest. Exceptional care was taken in the laying of the foundations to ensure an absolutely rigid track. After excavation to the necessary depths, longitudinal trenches were cut along the intended line of each rail to provide the necessary depth of concrete under the rail. The general construction of the foundations is in the nature of concrete girders tied together with intervening concrete, and in the clearway additional strength is given by the addition of spotwelded mesh reinforcement, the whole arrangement providing the maximum of strength with a minimum of concrete. This form of construction was made more particularly necessary on the ground of economy, as the use of armoured mastic asphalt paving necessitated the carrying up of the concrete to within 2¼ in. of the rail head. Where the nature of the sub-soil rendered it necessary, a layer of clean ashes wel rammed was put down to ensure good drainage. At regular intervals the excavations were taken to a greater depth, and concrete blocks formed to carry the cross-bearers and anchor grips, and forming a continuous support to the rails, all concrete up to this point being 5-1 mixture. Throughout the work B.S.S. No. 2 Sandberg silicon steel rails were used, these being supplied by Walter



Outline Map of Newport Corporation Tramways, Showing Extension to the Docks.

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Crossing of Newport Light Railway and the Great Western and the Tredegar Estate Railways, beyond which is the Junction with Existing Tramways.

Laying Armoured Mastic Paving—Newport Light Railway.

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Scott and Company, Limited, Leeds. All points were welded by the Thermit process.

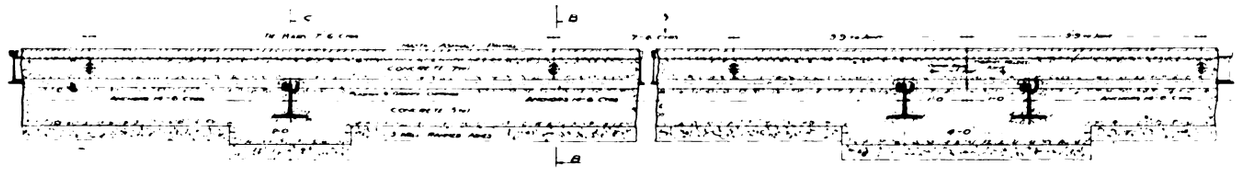
After the rails had been finally aligned, and the anchor grips driven home, the intervening space between the rails and the lower foundation was packed with a waterproof composition consisting of clean ¾-in. granite chippings and plascom compound, the composition being well packed and rammed, and afterwards dusted over with clean fine sand. This method of packing precludes any possibility of water logging under the rail. The upper layer of concrete, consisting of a 7-1 mixture, was then laid up to within 2¼ in. of the rail head. The concrete against the rail web was formed to provide a key for the armoured mastic paving. In this key a special rich bitumen mixture was put in to provide a cushion, and also form a watertight joint between the paving and the rail. The use of armoured mastic paving was decided upon in preference to wood paving or granite setts. The paving has been placed both within and without the rails and right up to the rail heads as explained above, and whilst this is regarded as rather in the nature of an experiment, it is believed that it will be a complete success. The whole of the paving was laid down under contract by the Western Trinidad Lake Asphalt Paving Company, Limited, Cardiff, to a rigid specification, and so confident are the company that they have given a seven years' maintenance guarantee. As laid, the paving provides an ideal surface, and in appearance leaves nothing to be desired. The carrying of the tramway over the various railway crossings, five in number, involved very considerable complications and difficulties, and the necessary diversions of gas, water, electric, telephone, and telegraph mains and cables, sewer manholes, etc., were complicated and costly. The actual laying of the whole of the crossings was completed in two week-ends. The whole of the railway crossings and other special track work were supplied by Edgar Allen and Company, Limited, being manufactured from their well-known manganese steel. The crossings are laid upon heavy timber underframes, which in turn are supported by six inches of 5-1 cement concrete. Armoured mastic paving has also been laid within the crossings.

With the object of giving the paving every opportunity, special attention has been given to the crossfalls and drainage of the track, and throughout they have been so arranged that under no circumstances can water accumulate or remain on the track.

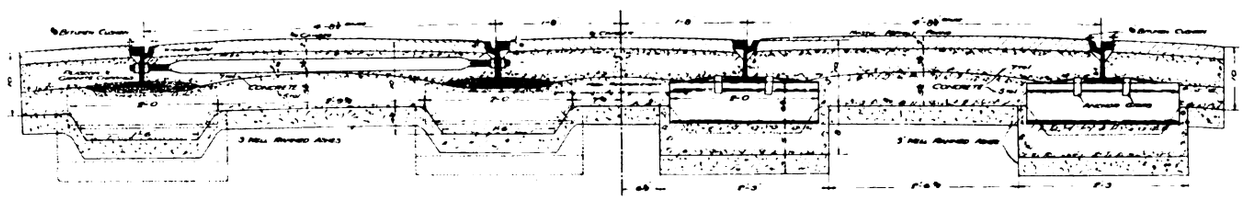
The overhead construction has been carried out on the span wire system, figure 8 trolley wire being used. The usual pole bands, brackets, and scroll work have been entirely discarded, and only plain mild steel clips used for carrying the span wires, with the object of ensuring the least cost of maintenance. The pole line loses nothing in appearance from this arrangement.

To provide additional cars for the new line, the Corporation purchased six double-decked cars from the London County Council.

The line was inspected and approved by the Board of Trade on November 28, 1917, and was opened for traffic on December 3, 1917. It is interesting to note that the Board of Trade specially commented upon the substantial manner in which the track had been constructed.



Longitudinal Section Through.



General Cross Section at B B. Cross Section at Anchor Section C C.

Permanent Way Details—Newport Light Railways.

DICK, KERR & COMPANY'S EXTENSIONS.

Combinations of interests with a view to eliminating waste in production is the prevailing note in the present stage of industrial development, and particularly is this the case in the engineering and allied trades. A notable example of what is being done in this direction is afforded by Messrs. Dick, Kerr and Company, Limited, whose many-sided enterprise as civil, mechanical and electrical engineers is world-famous. In the early days of its existence this company were engaged principally in contracting and in the manufacture of light railway material, which was, and is still, carried on at its general engineering works at Kilmarnock. Dick, Kerr and Company, however, have always been particularly associated with tramway developments both at home and abroad, which led to their becoming manufacturers of electrical machinery, and to the establishment of the Preston works. In addition to this well-known establishment, the company now own the business of the United Electric Car Company, Limited, also of Preston, and in addition have acquired control of the old-established engineering concern of Messrs. Willans and Robinson, Limited, of Rugby, whose reputation in connection with the Willans central valve engine and with the manufacture of steam turbines and Diesel engines is world-wide. Within the last few weeks negotiations have been completed with the Phœnix Dynamo Manufacturing Company, Limited, of Bradford, by which certain standard types of electrical machinery which have been manufactured separately by both companies, shall be manufactured jointly at Bradford. It is scarcely necessary to dwell at length upon the advantage which may be expected to accrue from these arrangements, but one obvious point is that while the technical and manufacturing experience of the various firms will be combined and become available for all, yet it will be possible to confine each works to those products for which it is best equipped. Under the centralised direction of the Dick, Kerr organisation, its extensive home and foreign connections will be available for the associated companies, and such a combination ought to be able to hold its own against any competition which may be met with after the war.

New Fuel Committee.—Mr. Percy Still, M.I.E.E., is the honorary secretary of a new committee appointed by the Controller of Munitions Mineral Oil Supplies, and styled the Heavy Oil Engine Fuel Committee. Its functions are to assist the Controller in connection with the subject of fuel oil supplies, and the use of tar oil as fuel in Diesel engines, and especially in relation to applications to use tar oil, and to methods of adapting Diesel engines for this fuel. The committee will be composed of the nine members of the Diesel Engine Users' Association, and two further members nominated by the Institution of Electrical Engineers.

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TRAMWAY AND POWER DIFFICULTIES ARISING FROM THE WAR.

AN ORDER TO CURTAIL PASSENGER SERVICES AND ELECTRICITY SUPPLIES.—THE LOADING PROBLEM AT TERMINI.—SUGGESTIONS FOR MEETING CAR CREW SHORTAGE.

Managers of electric traction undertakings are closely concerned in the effects of the latest war-time restrictions. The Order whereby restaurants, clubs, etc., will be closed at 9.30 p.m., and all places of entertainment not later than 10.30 p.m., coupled with the decision to ration all the large stations from which electric power is supplied to tramway and other undertakings, will lead to considerable re-arrangements of services throughout the area affected. This area includes the district south of a line from Bristol to the Wash. The object of the Order is to lessen the demand on the mines for fuel, and on the railways for coal haulage, while a further reason is the diversion to other uses of many of the steamers formerly engaged in bringing coal to the south.

In places outside the London district, the effects will probably begin and end with a further reduction of tramway facilities to fit in with the reduction of current consumption that is to be imposed, inasmuch as there will be little, if any, modification in the habits of the people to render necessary any re-arrangements of service hours.

In London, however, it is a moot question as to how far tramway services can be additionally curtailed without causing inconvenience so great as to make such a step prohibitive. It will probably be found that the indirect results of the "early closing" Order, by reducing the number of hours in which the ordinary services will be run, will represent the chief means by which any further economies in car mileage and current consumption can be attained. The probability is that necessary requirements will be met by running last cars from the central points to the suburbs at about 11 p.m., then carrying on with the "all-night" schedule. This will result in an appreciable saving and materially reduce the employees' hours of duty.

A section of the public whose hours of work extend to midnight or thereabouts will perhaps be somewhat inconvenienced, but, on the other hand, it may be found possible to meet their special needs Another effect of these new arrangements will be that of reducing the slack time in the evening that occurs between the business rush and the later period when theatre-goers are on their way home. The two periods will tend more or less to approach, and this again will to some extent simplify the task of tramway operation in the Metropolis.

THE ANNOUNCEMENT IN PARLIAMENT.

Sir Albert Stanley, President of the Board of Trade, announced the foregoing restrictions to the House of Commons on March 20, in connection with the consideration of 24 private bills promoted by gas companies with a view to relaxing the statutory provisions relating to the sliding scale of prices and dividends. He stated that when the application was first made, the Board of Trade, on the information available when these bills were introduced, considered that no case was made out for a general and indiscriminate relaxation of the requirements. Since then a very considerable change had taken place or was about to take place. It would not be possible henceforth for the necessary transport to be secured for supplying all the great gas and electric undertakings with coal. In addition to the transport difficulty, the withdrawal of men from the mines must reduce the output of coal. The withdrawal of coasting steamships which had been engaged in the transport of coal to the southern ports had cast upon the railways a burden beyond their capacity. It was essential, therefore, to find means whereby the quantity of coal consumed could be reduced.

It would probably be necessary in the very near future, Sir Albert said, to establish further restrictions with respect to passenger traffic. It was proposed in the next few days to cancel a very considerable number of passenger trains. With respect to the use of gas and electricity, the restrictions they were proposing were those which they felt were vitally necessary. They were proposing to issue an Order in the next few days which would have the effect of restricting the consumption of both of these commodities over a very considerable area. It was proposed that, as regards Great Britain, no lights should be used for illuminating shop windows It was also proposed that no food should be cooked nor any hot meals served in hotels, clubs, inns, restaurants, public eating, refreshment, or boarding houses between 9.30 at night and 5 o'clock the following morning, and that all lights in the dining rooms of those places must be extinguished between 10 o'clock at night and 5 o'clock the next morning. The Government were also proposing that no performances in theatres, music halls, cinemas, or other public places of amusement should be continued after 10.30 at night or reopened before 1 o'clock on the next day.

To adopt the further restrictions in all the counties south of a line drawn across the country from the Wash to the Bristol Channel the number of collieries (Sir A. Stanley continued) which would be involved in the Order was 33. Here they proposed that all users of gas and electricity should be restricted to using five-sixths of the amount consumed in the corresponding quarter of last year. This restriction was subject to a minimum allowance below which the consumption need not be reduced. This particular area was affected more than the other parts of the country because it was so remote from the coalfields. It would be necessary to make certain exceptions, such as munition works, hospitals, nursing homes, and places where by reason of the occupation not being generally similar to that for the comparative period, some modification of the restriction might be necessary.

It was also proposed to ration all the large stations from which power was supplied for tramway and electric railway undertakings. It would be necessary that all the tramway services in this area, and all electric railway services, including the Underground in London, should considerably restrict their services. It was also proposed to extend the scheme of rationing of household coal which had been supplied to London during the present winter to the greater part of England, but this rationing of household coal practically throughout England would have to be done during the next winter on a considerably reduced ration as compared with that in London.

As regarded Ireland, they were taking steps to reduce the consumption of coal. But the scheme had not yet been completed, and it would take a little time before they could announce the details. Ireland, too, must suffer some restriction. They had for some time been engaged in the construction of an extension railway in Ireland which he was advised would tap a very considerable source of coal in that country. He was told that it would be completed and in operation in May of this year.

With these restrictions the United Kingdom would still be very much better off than the enemy countries were to-day. The latest information in respect to Germany was that they were in a very bad way in regard to transport; that in the autumn of last year Germany found it necessary to reduce their train services by 55 per cent., and since that time there had been a further considerable reduction. The German tramway services in every instance had been reduced, and in some instances by as much as two-thirds of their pre-war service, and all through enemy countries they had found it necessary to reduce very substantially the consumption both of gas and of electricity.

SUGGESTIONS FOR SECURING SHORTER JOURNEY TIMES.

A correspondent writes:—In view of a further reduction in tramway employees the tramway services require speeding up, to reduce the congestion and inconvenience to passengers. It is not desirable to increase the maximum speed of the cars, but the aim should be to increase the average speed.

To accomplish this, two methods may be suggested. The first, and rather obvious method, is to reduce the number of stopping places. For instance, why not during rush hours and for workmen's cars stop at important points only, say only at those marked "All cars stop here?" Another means would be to abolish every alternate stopping point marked "Cars stop here by request." On very congested routes it might be advantageous to remove most of these signs. A few passengers would have to walk a little further to the nearest stopping places, but as the majority of passengers board the trams at important points which are marked "All cars stop here," most people would not be inconvenienced at all. All the passengers, however, would benefit by the improved service.

The second method could be used where two or more cars arrive at a terminus simultaneously; why not arrange for the leading car to pick up passengers at the terminus only for beyond a certain pre-arranged stopping place and make this place the first stop? The second car would follow immediately, so that passengers at intermediate points would not be kept waiting any longer than is usual. On certain tracks where cars for several routes run this would be less advantageous, but even then, it would be very useful when no car had appeared for several minutes, and a number arrive together. These and all methods of speeding up the tram service are to be encouraged, as they confer a direct benefit on everyone concerned. The increased average speed would enable the cars to do more journeys per day. The takings of the cars would be increased, and the running expenses reduced, as there would be less repairs. This would reduce the cost of running the cars and thus delay a further increase in fares.

Liverpool's Need of Labour and Material.—The Liverpool Tramways Committee propose to present a requisition to the Board of Trade asking (1) that 200 men should be provided to enable them to bring into service 100 cars urgently required on the streets, but sent into the sheds owing to lack of labour; (2) 35 additional motor omnibuses; and (3) material to the amount of about £5,000.

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THE
Tramway and Railway World

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LONDON, APRIL 11, 1918.

Restrictions on Traffic.

The restrictions on traffic on tramways and electric railways which Sir Albert Stanley, President of the Board of Trade, announced in the House of Commons on March 20 are a very serious matter for the south-eastern half of England. In the area south of a line from the Wash to the Bristol Channel all large power stations from which energy is supplied for tramways and electric railways are to be rationed for coal. This involves a reduction of services on all the tramways and electric railways in the area, and the underground railways of London are specifically mentioned as being included. These proposals form part of a wider scheme for compulsorily cutting down the consumption of coal, gas, and electricity, diminished lighting, heating, and so forth being also involved. It must be pointed out that these proposals involve something more than restrictions on the comfort and convenience of individuals. They are restrictions on the working power of the people, and this at a time when it is more essential than ever that the working power should be at its highest. If one asks what are the reasons calling for this serious reduction in coal consumption, only two are forthcoming, and they are far from satisfactory. One is a scarcity of ships to bring coal to the southern ports, and the other is the reduction in the number of miners owing to the "comb-out" for the army. The latter is of less magnitude and may be dismissed. As to the former, the Government have found it necessary to withdraw for employment elsewhere a number of coasting steamers which hitherto have been carrying coal to south of England ports to the extent of 3,000,000 tons a year. The railways cannot carry more than half that amount in addition to their present commitments, and so the other half has to be saved by drastic restrictions. It will be observed accordingly that once more the country has to suffer from the neglect by the Government since the war began of merchant shipbuilding. It is in London and the immediately surrounding populous areas that the restrictions on traffic will be most felt. The magnitude of the local passenger business by tramways and electric railways in and around the metropolis far exceeds that of the whole of the rest of the south-eastern area. For some time past the congestion of traffic during the busy hours has been excessive. The demands on the services—for the most part necessary demands—increase. The tramways with depleted staffs can do no more. The railways have succeeded in somewhat increasing their services, but they can do little more. For example, the London Electric Railway Company ran in January last half a million car miles more than in January of last year. All the present services are urgently required, and it will be impossible to effect much curtailment in the frequency of trains without causing partial paralysis of the necessary activities of London. Any proposal of this kind ought to be abandoned, so far at least as electric traction undertakings are concerned, because an enormous number of war workers are dependent upon them for transport. Many of these require to travel late in the evening, and consequently a certain number of trains must be run to meet their needs. The business of the Government is to find amid the great merchant fleet which is absolutely at their disposal the requisite number of steamers to carry the coal which is vital to industry in the south-east and south of England.

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Urgency of Reform in Parliamentary Powers.

Concurrently with the appalling war destruction, the Government is formulating schemes for reconstruction of legislative, commercial and industrial conditions. The original Reconstruction Committee appointed by the Government of 1914 was responsible for a number of proposals, and since the present Cabinet's appointment of the Ministry of Reconstruction under Dr. Addison, 21 committees have been busily carrying on investigations and submitting reports. The report recently issued by the Acquisition of Powers Sub-Committee of the original Reconstruction Committee is of interest to local authorities and companies concerned with extensions of electric traction, motor omnibus, and other public utility undertakings to be brought forward after the war. The task of the Sub-Committee involved the consideration of reforms that have often been advocated. It was to consider what steps could be taken to reduce the cost and simplify the process of obtaining Parliamentary powers, with particular reference to the extension of the Provisional Order system and to the desirability of moving Parliament to appoint a Select Committee of both Houses to consider the simplification of the procedure in the case of private Bills and otherwise. Although the Sub-Committee have adopted six recommendations that go towards effecting reforms under both of the foregoing heads, they also advise the appointment of a Select Committee on the ground that several points have been brought to their notice which could only be dealt with by a Parliamentary Committee. Their other suggestions are both thorough and necessary. Besides the consolidation of local Acts, they counsel the introduction of legislation in order to bring up to date the several Acts conferring general powers on local authorities, powers for carrying out public utility undertakings, and their periodical revision. The Provisional Order system comes in for drastic treatment, which is considerably in advance of the powers that have been given to the Board of Trade in that direction for the duration of the war. It is advised that the system should be extended so as to enable powers to be given similar to those conferred by special Act under similar circumstances; the extension of powers to make Orders not requiring confirmation by Parliament; and the grant of powers enabling Departments of State to make rules for regulating procedure in connection with Provisional Orders. Promoters of traction schemes will endorse the main reasons advanced for Provisional Order reform. These are that the complete legislative procedure should not be insisted upon when schemes are approved by the appropriate Department of State, nor opposed by any person or body having a *locus standi* in the matter, when brought formally to the notice of Parliament by being placed before both Houses. The application of the Provisional Order system is at present limited to the cases covered by the several enabling statutes, and any powers which cannot be obtained by this method must still be sought by a Private Bill. Remarking that there is a concensus of opinion in favour of a substantial extension of Provisional Order legislation, the report favours an authorisation of a more general character than could be effected by a specific enumeration of additional powers. It is therefore recommended that when new powers are applied for which are similar to powers already conferred by special Act in similar circumstances, the appropriate Department should be enabled to make a Provisional Order conferring the new powers desired, Parliament still being able to exercise final control if it appears that the grant of the new powers in any particular case was not justified. The report advises a reduction of Private Bill costs, and a saving of time by embodying in general enactments common form clauses and what are known as the "Clauses Acts." Among the latter the Sub-Committee cite the Tramway Act as containing a series of "model" clauses which can be incorporated in special Acts or Provisional Orders by reference. It is the duty of all who are interested in the Sub-Committee's proposals to urge the Government to adopt them without delay, because on the conclusion of the war there will be large arrears of public utility legislation to be undertaken, and the Committee fear the financial circumstances which will probably prevail for a long period after the war will create an indisposition to incur any avoidable expenditure on procedure.

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"Safety First."

One aspect of the remarkably successful first year of the London Safety First Council is of interest to local authorities not only in the provinces but throughout the Empire. It is a proof which the year's work has afforded of the immense advantage that would result from the extension of the movement to every considerable centre of population. Both Lord Sydenham, the Council's president, and Mr. Hayes Fisher President of the Local Government Board, laid stress on this aspect of the matter in their remarks at the annual meeting, which was reported in our issue of March 14. Thanks to Mr. Fisher, the adoption of that course has been rendered easy for provincial towns by the sanction which the Board has given to the payment of a reasonable subscription to a "Safety First" Council. This facility has contributed to the success of the Greater London body, upon which forty-five municipal authorities are represented. That there is hope of provincial extension of the work is evident from a remark made at the annual meeting by Mr. H. E. Blain, the founder and one of the hon. secretaries, whose enthusiasm induced him last year to pay private propaganda visits to several cities during his vacation. A start had previously been made in the desired direction by Sheffield Tramways Committee, whose general manager was led to take action by the frequency of accidents resulting from the reduced lighting. Doubtless the large amount of civil work arising from the war, which has been relegated to local authorities by the Government, accounts for the postponement of action in other great centres. The initiative can fittingly come from Watch, Tramway, and Education Committees, and it will assist them to note the constitution of the London Council. In addition to the forty-five Local Government bodies (six of which are also tramway authorities), the Council comprises three vehicle workers' associations, fifteen professional associations, technical research societies, nine railway companies, three tramway companies, five omnibus companies, seven commercial firms, and nine co-opted members. All of these sources of membership are available in the provinces, and a valuable aid to the initiation of the work will be found in the first annual report of the work of the London Council. Another extensive field from which support can be derived is to be found in connection with the great industries, where, as Lord Sydenham remarked, "safety first" principles can be advocated with advantage. The London Council is extending its activities in that direction through the medium of a sub-committee. Local authorities are also to be invited to hold safety propaganda meetings. During the year many provincial authorities have assisted the efforts of the parent body by supporting the movement for the institution of a footpath by-law. Under this proposal it is desired, in the interests of pedestrians, to reverse the "keep to the right" rule. There is a concensus of opinion that a change would reduce the number of accidents due to pedestrians stepping off the pavement into the track of oncoming vehicles, and it is satisfactory to find that Mr. Hayes Fisher is watching experiments towards that end. The President of the Local Government Board exhorted local authorities to seek an exact analysis of every street accident in their districts, as he is certain that investigation will reveal certain main causes. That there is substantiation for this conclusion is shown by the astonishing reduction which has been effected in the number of fatalities and cases of injury recorded in London during the past year.

SELECT COMMITTEE ON TRAMWAY FARES.

On Thursday, April 4, Sir Albert Stanley, President of the Board of Trade, received a deputation from tramway undertakings, including representatives of the Municipal Tramways Association and the Tramways and Light Railways Association. The object of the deputation was to impress upon the Board of Trade the necessity of immediate action being taken which will permit an increase in tramway fares. Owing to the large increase in wages since the outbreak of war, and particularly owing to the recent award of the Committee on Production, the position of tramway undertakings has become serious, and many undertakings are now working at a loss. The financial results of a number of undertakings in this position were laid before the President. The case was presented on behalf of the Municipal Tramways Association by Mr. J. B. Hamilton, general manager of Leeds Corporation Tramways, and Mr. Harrison Barrow, chairman of the Birmingham Corporation Tramways Committee, and on behalf of the Tramways and Light Railways Association by Mr. Harry England, general manager of the Yorkshire (West Riding) Electric Tramways Company. In his reply, Sir Albert Stanley said that he recognised the necessity of legislation, and he suggested the appointment of a Select Committee of the House of Commons to consider the matter. The appointment of such a committee would probably prove the best means of facilitating the carrying out of the suggested legislation with the least delay.

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ROBERT WINTHROP BLACKWELL, M.I.E.E.

By the sudden death of Mr. Robert W. Blackwell, after a very short illness, at his residence, "Elmbank," Hampstead, on March 28, the electrical profession loses one of the few remaining and best known pioneers of electric traction, and one whose name has been intimately connected with this most important branch of electrical engineering, both in the United States and in this country, for the last 35 years.

Born in 1858, Mr. Robert W. Blackwell graduated as M.A. and LL.B. at Princeton University, where he was a contemporary of President Wilson, and afterwards practised as a Councillor of Law at the American bar. Attracted, however, by the great demand for mechanically-operated street cars, the need for which was so urgently felt in the United States, he founded in 1883, jointly with Mr. Edward W. Bentley and Walter H. Knight, the Bentley Knight Electric Railway Company of New York, which installed and equipped an electrically-operated tramway system in Cleveland, Ohio, opened for traffic in 1884, and this was the first line to be operated electrically as a commercial undertaking.

Mr. Blackwell, as a contemporary of Sprague, Vandepoel, and Edison, was intimately associated with the great pioneer work carried out in the United States between 1883 and 1889. Speaking at the sixth annual meeting of the Street Railway Association, in Philadelphia, on October 19, 1887, Mr. Blackwell said :—"We entered the electric city tramway field long in advance of all others ; and we believe that electric street railways for city service can be used effectively only where the power to drive the car is transmitted to it from a generating station." How true this prevision was has been amply demonstrated, although at the time many thought the future lay with the storage battery.

Actively engaged with the management of his company until 1889, Mr. Blackwell then transferred the Bentley Knight Company's interests to the Thomson-Houston Company of Lynn, Mass., and was shortly afterwards summoned to England to give evidence before Parliament on behalf of the first Bill promoted by the Central London Railway Company. The experience he gained during this visit showed him the great prospects of electric traction in the United Kingdom and three years later induced him to take up his residence in this country. In 1890 he became associated with Messrs. Greenwood and Batley, of Leeds, in conjunction with whom he opened an office in London for the purpose of introducing electric traction on the tramway systems in the United Kingdom. Speaking about the United States before the Institute of Electrical Engineers in 1892, Mr. Blackwell said :—"The public has thoroughly supported those tramways which have introduced electricity, and have rewarded their enterprise by greatly increased patronage. That electric traction will receive the same acceptance here that it has already gained across the water, I do not doubt." Time more than justified Mr. Blackwell's anticipations, although several years of arduous pioneering work were necessary before electric traction was definitely established in this country. In 1894 Mr. Blackwell founded the firm of Robert W. Blackwell and Company which, ever since that time has been well known as one of the leading firms of merchants, manufacturers, engineers and contractors. All those who have dealt with this firm agree that it has deservedly acquired a high reputation for the uprightness of its dealings and the quality of its work.

In 1895 Messrs. Blackwell and Company secured the contract from the British Thomson-Houston Company for the construction and electrical equipment of a new tramway in Bristol, and the work they there carried out was so satisfactory that it at once secured them a position as contractors in the electric traction field. The very great financial success secured by this first electrification on a commercial scale served as an incentive to many others to follow in the footsteps of the enterprising Bristol Tramways and Carriage Company, and Bristol was visited and inspected by delegates from all parts of Great Britain and the Continent as the model electric tramway installation. As engineers and contractors Messrs. R. W. Blackwell were subsequently connected with a large number of electric tramway institutions in this country and abroad. They also supplied materials and engineering advice to a large number of Continental firms and they were the expert advisers on traction matters to such firms as the Oerlikon Company, Shuckert and Company, and Ganz and Company. It was they who originally designed the successful swivelling trolley standards for top seat cars, and who first standardised the pole and bracket arm construction for overhead lines. Wherever anything new was to be seen or experience was to be gained there Mr. Blackwell went or sent his engineers or representatives to investigate and test. He exhibited at the Brussels Exhibition of 1897, and his display was one of the most interesting in the whole British section ; and he was a member of the International Jury there.

It is interesting to note that although of American birth, all Mr. Blackwell's associates and staff were British, and the prescience shown by him in selecting men, and the kindly assistance and advice and loyal support he always gave his staff has resulted in the launching of a great many engineers into the prominent positions they now hold in many parts of the world. His motto has always been—"You cannot afford to do bad work ; only the best is good enough."

His firm carried out many important works for English railway companies, including the Great Western, the Great Central, and the London Brighton and South Coast Railway Companies. The work for the latter company includes some of the most difficult bits of construction ever put up and erected under the most unfavourable conditions. The work was carried out to the design and under the supervision of Mr. Philip Dawson, M.Inst.C.E., etc., the consulting electrical engineer of the London, Brighton and South Coast Railway Company, who for the first 15 years of Mr. Blackwell's activities in this country had been intimately associated with him. This line has now been in operation for over nine years. At the annual meeting of the Brighton Railway, on February 2, 1910, the chairman, Lord Bessborough, expressed his satisfaction at the admirable manner in which Messrs. Blackwell had carried out their portion of the contract and testified to the excellence of the overhead work and the perfection of their electrical work.

As founder and chairman of Robert W. Blackwell and Company, Limited, Mr. Blackwell's name is a household word with all those interested in or connected with electric traction throughout the world. Not only as an engineer and contractor, but in many other directions Mr. Blackwell showed an initiative by building up a most

R. W. Blackwell.

successful roofing business, the material being made in his own works by the manufacture in this country of apparatus and materials which had previously had to be imported from abroad, and by doing everything he could to encourage British enterprise. He was for many years chairman of Messrs. Johnson and Philips, the well-known electrical engineers and cable manufacturers, and did much to bring them to the high pitch of prosperity they have reached to-day, and he was as much loved and respected by his co-directors and the employees of this firm as he was by those of Messrs. Blackwell and Company.

He had many outside interests which cannot be referred to here. Sufficient be it to say that he was in charge of most of the arrangements for looking after the American Military Mission during their visit to this country and that he was a great supporter of the American Red Cross and kindred societies. He was a member of the Royal Automobile Club and the City Liberal Club and always retained his membership of the Manhattan and University Clubs of New York. He was a prominent Mason, was Past Master of the Lodge of the Nine Muses and the founder of the American Columbia Lodge and was awarded London rank for his Masonic services. His memory will be kept green in the hearts of all those who had the privilege of his friendship, and nothing was more characteristic of him than the opinion expressed by one of his oldest friends, "Blackwell was as straight as a die."

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TRAMWAY AND OMNIBUS EMPLOYEES' WAGES.

THE COMMITTEE ON PRODUCTION GRANT 20S. WAR BONUS.

The award of the Committee on Production in the arbitration between tramway employers and the tramway and omnibus workers was published on March 8, and was with some abbreviation given in our issue of March 14. It is repeated in full below. The award has been accepted throughout the country and wages have been brought up to the 20s. bonus standard.

The terms of the award are as follow :—

(1) The parties to this reference are (1) the National Transport Workers' Federation and (2) the Municipal Tramways Association, the Tramways and Light Railways Association, and the London General Omnibus Company, Limited.

(2) The claim submitted was for £1 per week over pre-war rates to both males and females aged 18 and upwards (youths and girls under 18 to have half the amount given to adults), with proportionate increases for overtime, the increase to become operative on the first paying in January for the week previous to that pay day, and the method of payment to be the same as is now in operation in the various undertakings in so far as the payment of a war wage is concerned.

(4) The decision of the Committee is that there shall be paid to the men concerned aged 18 and over, and to the grades of women aged 18 and over whose terms of employment include the undertaking that they shall be paid the same rates as the grades of men whose places they have filled, such an advance as shall give £1 per week over pre-war rates to the grades concerned, payment to be made on the basis of a week of six days or six shifts.

(5) In the case of women aged 18 and over not included in above award, the advances now being made shall be increased by 4s. per week, subject to a maximum of 20s. a week over pre-war rates of the grades concerned.

(6) In the case of girls and boys and youths under 18 years of age the advances now being paid shall be increased by such an amount per week as shall give the girls, boys and youths under 18 years of age in the undertakings concerned half the additional advances given by this award to the men or women, as the case may be, of the same undertaking.

(7) The advances hereby awarded shall come into force as from the beginning of the pay period for which payment is made on the pay day in the week commencing March 1, 1918, and shall be taken into account in the calculation of payment for overtime and Sunday work where extra payment is made for such work.

(8) All existing bonuses shall be taken into account in the calculation of payment for overtime and Sunday work.

(9) The advances are to be regarded as war wages and recognised as due to and dependent upon the existence of the abnormal conditions now prevailing in consequence of the war.

(10) The methods of payments of the advances given by this award shall be the same as are now in operation in the various undertakings in so far as the payment of war wage is concerned.

(11) This award shall apply only to women to whom the provisions of the Orders made by the Minister of Munitions under the powers conferred upon him by the Munitions of War (Amendment) Act, 1916, do not apply.

GEORGE S. GIBBS.
JOHN M. DENNY.
F. S. BUTTON.

H. J. WILSON, *Secretary*,
5, Old Palace Yard, S.W.1.
March 8, 1918.

INCREASE IN TRAMWAY FARES ESSENTIAL.

As a consequence of the award of the Committee on Production, it is essential that tramway fares should be increased. This has already been done in many places, but in some cases statutory restrictions prevent necessary revision. In view of this limitation a resolution was passed at a conference of tramway employers and representatives of the unions asking Sir George Askwith to obtain from the Government an undertaking that they would take immediate steps to authorise an increase of the maximum tolls and charges, whether statutory or otherwise, which may be demanded on all tramways and light railways to an amount to be decided by the Board of Trade. The resolution was signed on behalf of the Municipal Tramways Association by Mr. J. B. Hamilton ; on behalf of the Tramways and Light Railways Association by Mr. R. J. Howley ; and on behalf of the National Transport Federation by Mr. R. Williams.

As stated elsewhere in this issue, a Select Committee of the House of Commons is to be appointed to consider the whole question of tramway fares.

Rolling Stock for the United States.—*The Board of Trade Journal* states that the United States Railway Administration will soon call for tenders for railway equipment amounting in value to approximately one hundred million dollars. The order will include about 2,700 locomotives and 45,000 goods wagons. The first call will be for 900 locomotives.

BRADFORD WAGES DISPUTE.

DECISION AGAINST WOMEN CONDUCTORS.

At a meeting of the War Wages Committee of the Bradford Corporation on April 3, it was reported that the decision of the Committee on Production with regard to the wages dispute between the conductresses employed on the Bradford tramway service and the Tramways Committee had been received. It will be remembered that the Ministry of Labour had been asked to interpret the award given on March 8 last by the Committee on Production relating to tramway and motor omnibus workers' wages. By that award an advance of £1 per week on pre-war rates was granted, but it was held by the Bradford Tramways Committee that this, while it applied to the men, did not apply to the women tramway workers, who had been receiving a smaller war bonus than that received by the men. The committee's contention was that under the award the women were entitled to an advance of 4s. per week, making an advance of 13s. per week on pre-war rates.

The question was by agreement submitted to the Ministry of Labour, who referred it to the Committee on Production. The decision of that Committee is as follows :—

> The terms of employment of women in the service of the Bradford Corporation (Tramways Department) did not entitle them to the same rates of war bonus or war wage advance as have been granted to men, and the further war wage advance to which the women concerned have become entitled is 4s. per week, in accordance with Clause 5 of the award of the Committee on Production.

At the meeting of the Bradford War Wages Committee appreciation was expressed of the way in which the case had been dealt with by the officials concerned. It was stated that at the hearing of the case on behalf of the respective parties before the Committee on Production, the Corporation was represented by the Tramways Manager (Mr. C. J. Spencer), the City Treasurer (Mr. F. Ogden Whiteley) and the Deputy Town Clerk (Mr. Norman L. Fleming). The chairman and deputy-chairman of the two committees concerned were notified, but did not attend, being content to leave the matter in the hands of the officials named.

TRAMWAYS (BOARD OF TRADE) COMMITTEE.

The Tramways (Board of Trade) Committee has removed to 8, Buckingham Gate, Westminster, London, S.W.1 (Telephone number, Victoria 6970 ; telegraphic address, "Tramboteom, Sowest, London"). All communications intended for the Committee should be addressed to the Secretary, Mr. J. N. Wilson.

Meetings have now been held in each of the nine areas into which the committee has divided the country and in each advisory area sub-committees have been appointed. In each district there has been a gratifying response to the suggestions of the committee, and the fullest co-operation and assistance is being given by tramway authorities throughout the country.

The following notice with reference to the area conferences and local advisory committees has appeared in the *Board of Trade Journal* :—

1. General Area Conferences. Representatives of all the tramway undertakings in the area will be called together in conference when necessary. It is suggested that two representatives of each undertaking should attend these conferences, which will be summoned by the Tramways (Board of Trade) Committee from time to time.

2. Local Advisory Committees.—It is suggested that a committee consisting of an officer representing each undertaking in the area be set up to act as a local advisory committee.

3. The local advisory committees will appoint any sub-committee that may be desirable to assist the Tramways (Board of Trade) Committee.

4. The local advisory committees will appoint an honorary secretary, to whom all communications should be addressed.

RAILLESS, LIMITED.

Tramway managers and all who are concerned with the transport of passengers or goods will be interested to learn that a new company has been formed to take over the patents and goodwill of the R.E.T. Construction Company. Its name, "Railless, Limited," sufficiently indicates its objects. The company will work the well-known R.E.T. system which has been operating successfully for several years in various towns, including Leeds and Rotherham at home, Boksburg and Bloemfontein in South Africa, and Shanghai in China. Under the present conditions the work of the company must to a great extent be preparatory, but much preliminary work can be done now, and the way paved for meeting the demands for increased facilities which will follow the conclusion of peace.

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FINANCIAL REPORTS AND MEETINGS.

Wemyss and District Tramways Company, Limited, had a record year in 1917 in regard to traffic receipts, these amounting to £17,043. The net profit was £6,058, and the dividend is 7½ per cent. on both preference and ordinary shares.

W. T. Glover and Company, Limited.—A dividend has been declared on the ordinary shares for 1917 at the rate of 5 per cent. and a bonus of 2½ per cent. After placing £20,000 to reserve, £10,770 has been carried forward, subject to excess profits duty.

Aberdeen Suburban Tramways Company.—The report for the half-year to January 31 shows a profit of £1,165. This, together with the sum of £448 brought forward, makes £1,613 in all to the credit of profit and loss account, subject to allowance for depreciation and directors' fees.

Hastings Tramways Company, Limited. The accounts for 1917 show an available profit of £12,972. The directors recommend a dividend of 6 per cent. on preference shares for the year, placing £2,500 to depreciation account, and £4,810 to reduction of suspense account, carrying forward £862.

Bruce Peebles and Company. -The report for the year ended December 31, 1917, shows that the trading profit amounted to £23,616. The net profit of £14,584 is subject to excess profits duty for the years 1916 and 1917, the amounts of which have not yet been adjusted. Having regard to the abnormal times, the directors regard the results as satisfactory.

Southampton Tramways.—The borough rate will be reduced by one penny this year, chiefly owing to the appropriation from the tramway profits of £7,920, equivalent to a threepenny rate. An attempt was made at a recent meeting of the Finance Committee to secure £10,000 from the tramway profits, but Alderman Dunsford, chairman of the Tramways Committee, succeeded in defeating the proposal, which in view of the present condition of the undertaking would have been highly injudicious.

Callender's Cable and Construction Company. -The directors have had under consideration the desirability of bringing the nominal issued capital more into accord with the actual funds invested in the business. Owing to the prudent policy adopted for many years past a surplus has been accumulated, apart from the reserve, which exceeds the total issued ordinary share capital. It is therefore proposed that there shall be issued to the ordinary shareholders a new ordinary share in addition to each share held. At the same time it is also proposed to subdivide the shares, both preference and ordinary, which are of the denomination of £5 each, into shares of £1 each. In order to carry this scheme into effect, it will be necessary to increase the authorised share capital, and powers will be asked to raise this from £500,000 to £700,000. After providing for the distribution above-mentioned, there will remain unissued £150 000 in share capital

Tramways Light and Power Company, Limited.—At the fifth general meeting, Viscount Chilston (chairman) said that the difficulties of the undertakings had not grown less during the past year, but, notwithstanding, they were able to report substantial progress. The total income for the year amounted to £42,215, as compared with £35,272 in 1916. Administration expenses were £1,100 greater, and the balance available for debenture interest, sinking fund, and dividend was £39,274, as against £33,420. In regard to the Leamington and Warwick property, in the profits of which there was a decrease in 1916, these were now showing considerable improvement, except the lighting portion of the Warwick undertaking. Here a considerable increase in gross receipts had been absorbed by increased expenses. The report and accounts were adopted, and in acknowledging a vote of thanks, the chairman gave figures showing the progress the company had made. In 1914, the first complete year, the receipts were £28,047, and in 1915, £30,501. For 1916 they had increased to £35,287, and for the year under review, £42,238.

Tyneside Tramways and Tramroads Company, Limited.—At the half-yearly meeting the chairman, in moving the adoption of the report, said that the receipts had been considerably in excess of the previous year, and £11,500 more than a year ago. The greater part of that increase had been made in the latter half of the year, and the receipts were still increasing. The increase was not due to an increase in ordinary fares, for these had remained practically the same as before. The increased income was distributed over three heads—ordinary, holiday, and workmen's traffic. About 85 per cent. of the increase was under ordinary traffic, and was probably due to the fact that railway traffic had been very much reduced and was more expensive, and also because there were no facilities for river traffic. Referring to suggestions that, in view of the company's prosperity, a larger dividend might have been paid, he said that the directors had not thought it right to deal liberally with the available balance for that purpose because of the expenses that would be incurred after the war in relaying the track. Now there was a sufficient balance to warrant paying a bonus of 1 per cent. One thousand pounds had been transferred to the reserve for depreciation, and £1,400 to the special reserve fund.

Hadfields, Limited.—The report for 1917 states that the profits amounted to £257,510, or in all, with £185,695 brought forward, to £443,205; subject to adjustments that may be necessary to meet the provisions of the Finance Acts. It is proposed to add £100,000 to reserve and renewal account, and to carry forward £209,705. In addition to the interim dividend of 1s. per share paid in July last on the ordinary shares, the directors recommend a further dividend of 4s. per share, together with a bonus of 1s. per share, free of tax.

Mansfield and District Tramways Company.—The report shows a balance at the credit of revenue account, including £1,896 brought forward, of £12,265, from which appropriations have been made as follow:—Interest on debentures for 1917, less tax, £2,285; debenture sinking fund, £1,837; transfer to reserves, £1,000; interim dividend on preference shares to June 30, 1917, less tax, £1,732; interim dividend on ordinary shares to June 30, 1917, less tax, £750, leaving £4,659, which the directors recommend should be dealt with as follows:—Dividend on preference shares for half-year to December 31, 1917, less tax, £1,732; dividend of 5 per cent. on ordinary shares, making with the interim dividend already paid a distribution at the rate of 8 per cent. for the year, less tax, £1,250; to be carried forward, £1,677.

The British Aluminium Company, Limited.—The report for 1917 shows profits, together with interests and dividends on investments, amounting to £423,663, after making provisions for excess profits duty and special taxation; this, with £26,926 brought forward, making £460,589. The directors have set aside for income-tax, bad and doubtful debts, depreciation, and proportion of profits payable to directors, £103,115; prior lien debenture service fund, £48,000; debenture stock service fund, £43,224; reserve for depreciation, £70,000; reserve account, £75,000; leaving £111,250. A final dividend at the rate of 12 per cent. per annum on the ordinary shares, making 10 per cent. for the year, is declared, leaving £33,214 to be carried forward. The reserve account now amounts to £400,000, of which £220,599 has been invested in outside securities, including £200,000 War Loan. The depreciation reserve amounts to £380,000.

Lancashire United Tramways, Limited. -The ordinary general meeting was held on March 5. The Hon. Sir Arthur Stanley, M.P., chairman, in moving the adoption of the report and balance sheet for 1917, pointed out that the profit would enable a payment of 5 per cent. to be made on the second mortgage debenture stock. The number of passengers was 19,619,026, an increase of nearly 2,000,000, notwithstanding a decrease in car mileage of about 10 per cent. owing to the abnormal conditions. The increase in the supply of electrical energy to consumers was also satisfactory, amounting to over 1,800,000 units. The total number of units sold was 5,126,568. Expenditure showed a considerable increase, wages accounting for the greater portion. At the present time 195 employees, out of a total of 400, were serving in His Majesty's Forces, of whom he regretted to say 10 had been killed. The company still continue the relief to dependants of men serving with the colours. The chairman also thanked the staff and employees for their monthly contributions to the British Red Cross Society and the Order of St. John of Jerusalem in England, the amount subscribed being over £1,100. A vote of thanks was accorded to the chairman, directors, officials, and staff for the manner in which the working of the company had been carried out during a very difficult time.

Sunderland District Tramways.—Mr. H. R. Hogg, presiding at the thirteenth annual general meeting, said that the receipts had increased during the year by £5,123, or 16 per cent. This meant the carrying of nearly one million additional passengers, an increase of 18·71 per cent., requiring additional mileage of 72,277. The receipts per car-mile were 13·745d., an increase of ·382d., and the running expenses 8·179d., an increase of ·837d. Energy consumption was 1·69 units per car-mile, an increase of ·18, partly due to the additional loads carried and partly to less experienced drivers. The Board had adopted the conservative policy of retaining in hand sufficient funds for obtaining more cars and passing loops, which must be put in hand as soon as labour was available. During the year they had lost 44 men who had been called up. They started training 93 more drivers and 41 had passed the test, and 70 new conductors. The women working in the car sheds and as conductors had proved quite competent. The report, which was adopted, states that after charging the expense of operation and administration, and providing for depreciation of rolling stock, &c., the balance remaining is £12,519, or, with £881 from the previous year, £13,400. From this has to be deducted interest on the prior lien bonds and first mortgage debentures, £7,100; sinking fund instalment, £500; depreciation on investment, £900; transfer to general reserve account, £2,200; leaving a balance of £3,000 6s. 3d. From this the directors recommend the payment of interest at the rate of 3 per cent. per annum (less income-tax) on the first income bonds, which will absorb £2,102, leaving £898 to be carried forward to the credit of the current year. The traffic receipts show an increase of £5,135 17s. compared with 1916, but working expenses have been considerably higher, the net result of the year's operations showing an increase in the profit of £666.

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Halifax Corporation Tramways.—The appended table shows the results of the working of the undertaking for the year ended March 31 last, as compared with the two preceding years :—

	1916–17.	1915–16.	1914–15.
	£	£	£
Traffic revenue	114,092	112,937	111,792
Total revenue	115,075	113,602	113,170
Working expenses	76,136	72,246	73,504
Interest on capital	10,983	9,832	10,424
Contribution to sinking fund	12,843	12,489	12,106
Net profit	15,113	19,055	*16,211
Total car-miles run	2,048,772	2,195,980	2,330,104
Passengers carried	21,180,584	21,024,003	20,707,071
Total number of B.O.T. units used	4,546,756	4,618,207	4,607,293
Total number of B.O.T. units used per car-mile	2·22	2·10	1·98
Average number of cars in use daily	68·9	73·5	78·0
Traffic revenue per mile of single track ..	£2,056	£2,035	£2,015
Traffic revenue per car-mile	13·36d.	12·34d.	11·51d.
Total revenue per car-mile	13·48d.	12·41d.	11·66d.
Working expenses per car-mile, including power cost	8·92d.	7·90d.	7·57d.
Percentage of expenses to total receipts	66	63	65
Average car-miles per day	80·61d.	82·08d.	81·76d.

*After charging £925 Parliamentary expenses.

London United Tramways—Reorganisation of Capital.—The committee appointed by the debenture holders in July last to formulate a scheme for the reorganisation of the whole of the capital has issued an interim report. In regard to the general effect of the scheme it is not possible at present to say more than that it provides for a great reduction of the present share capital, and the division of the existing debenture stock of £1,650,000 into equal moieties of 4 per cent. debenture stock and 5 per cent. preference shares non-cumulative for five years, but with priority of capital. The arrangements proposed are, however, dependent upon the passing into law of a Bill now before Parliament. The Bill provides, among other things, for an extension of the periods of the various franchises under which the tramways are operated, and also permits of some increase in the fares. The system urgently requires a large expenditure on renewals and repairs. The committee has agreed to recommend that the money coming from the London County Council, amounting to nearly a quarter of a million sterling, and other funds accumulating in the receivership, should be applied to the physical habilitation of the system. They have also agreed to the conversion of part of the existing debenture stock into preference shares, so that if necessary part of the earnings otherwise applicable to debenture interest may for a period be diverted to maintenance.

Bristol Tramways and Carriage Company, Limited.—For the year ended December 31, 1917, the revenue amounted to £642,783, and the working and general expenses and renewals to £530,176, leaving with the amount brought forward an available balance of £122,243, or an increase of £11,727. Interest on investments has been carried to the reserve fund, and after adjusting the securities to their value at December 31 last, this fund stood at £335,603. With the addition of £30,000 now proposed, and £25,000 to provide for deferred repairs, renewals, and exceptional wear and tear of plant and equipment, the total reserves will amount to £390,603. Receipts of the tramways show an increase of £30,737, and of the carriage department £52,987. Passengers increased by 3,353 to 63,981,775. The annual dividend rate, which was advanced from 5 to 6 per cent. a year ago, is to be 6¾ per cent., the balance payment of 3¾ per cent. being free of income-tax, and £30,000 is once more to be reserved for contingencies and renewals. The total reserves will stand at £390,604. The option of the Bristol Corporation to purchase the undertaking was extended during the year by a further order from the Board of Trade to December 31, 1918. A comparison of the results for the past five years is appended :—

	1917.	1916.	1915.	1914.	1913.
RECEIPTS—					
Tramways department ...	£285,333	£254,597	£248,355	£239,651	£243,686
Carriage department ...	347,069	294,081	258,530	209,512	174,701
Sundry receipts	10,381	7,229	5,500	5,611	5,429
	£642,783	£555,907	£512,385	£454,774	£423,816
EXPENSES—					
Traffic expenses	£236,884	£187,567	£175,415	£174,623	£164,810
General expenses	79,488	88,472	75,916	58,947	49,275
Renewals, repairs, and maintenance	213,804	174,408	162,189	138,615	129,498
	£530,176	£450,447	£413,520	£372,185	£343,583
Net revenue	£112,607	£105,460	£98,865	£82,589	£80,233
Balance from last account ...	9,636	5,056	—	—	—
Total	£122,243	£110,516	£98,865	£82,589	£80,233
Interest	£25,696	£27,598	£30,502	£30,638	£27,443
Interest carried to reserve fund	5,270	4,563	4,365	4,468	4,408
Dividend on 4 per cent. pref. shares	15,000	15,542	17,333	18,458	18,833
Interim dividend (June) on ordinary shares	9,375 (5 p.c.)	10,052 (5 p.c.)	8,984 (4 p.c.)	9,396 (4 p.c.)	9,417 (4 p.c.)
Final dividend for half-year on ordinary shares ...	18,750 (7½ p.c.)	13,125 (7 p.c.)	12,625 (6 p.c.)	11,328 (5 p.c.)	11,771 (5 p.c.)
Addition to reserve fund ...	30,000	30,000	20,000	8,301	8,361
Carried forward	£18,152	£9,636	£5,056	—	—

PERSONAL.

Mr. J. W. Galloway, tramways engineer of Halifax, is to receive an increase in his salary from £325 to £375.

Mr. H. D. Munro, electrical engineer of Exeter, has been granted an increase in salary from £475 to £550 a year.

Mr. A. T. Lambert, tramways manager of Maidstone, has been granted an increase of £100 in salary to £400 a year.

Mr. F. J. B. Hosken has resigned the managership of Darwen tramways, and a successor is being sought at £250 a year.

Mr. J. F. Simpson, tramways engineer and manager of Preston Corporation, has been granted an increase in salary of £100.

Mr. W. M. Rogerson, electrical engineer of Halifax, has been recommended for an increase in salary from £700 to £800 a year.

Mr. A. F. Lucas, tramways manager of Leicester Corporation, has been recommended for an increase in salary from £500 to £600.

Mr. C. R. Everson, tramways manager of Plymouth Corporation, has been continued in his appointment at a salary of £600 per annum.

Mr. E. H. Bond, works superintendent of Dover Corporation Tramways, has been recommended for appointment as tramways manager.

Mr. C. W. Charlesworth has been appointed commercial secretary to Wolverhampton electricity undertaking at a salary of £300 per annum.

Mr. R. H. Wilkinson, general manager of Huddersfield Corporation Tramways, has been granted an increase in salary from £500 to £600 a year.

Mr. H. Faraday Proctor, electrical engineer of Bristol Corporation, has been granted an increase of £100 in salary to £1,000 per annum as from January last.

Mr. P. Priestly, general manager of Oldham Corporation Tramways, has been appointed deputy general manager of Liverpool Corporation Tramways.

Mr. G. Roddy, traffic manager of the Rhondda tramways, has been appointed divisional inspector for South Wales and Monmouthshire under the Ministry of Food.

Mr. F. W. Purse, city electrical engineer, Carlisle, has received an increase in salary from £500 to £600, with two further annual increments of £50 per annum.

Mr. H. P. Stokes, electrical engineer and tramways manager of the Bexley Council, has been granted an increase in salary of £200 per annum as from January 1, 1918.

Mr. L. W. Woodman, lately borough electrical engineer of Dover, has accepted an appointment as electrical engineer to the National Smelting Company, of Avonmouth.

Mr. E. Carden, who recently resigned the position of general manager of Dover Corporation Tramways, has been presented by the staff with a silver cigarette case.

Mr. James Makin, of Stoke-on-Trent, has been appointed chief assistant to the Bexley electricity and tramways undertaking, at a commencing salary of £300 per annum.

Mr. C. Clarke, general manager of Birkenhead Corporation Tramways, has been granted an increase of salary from £450 to £500, rising by annual increments of £50 to £650.

Mr. J. W. Spark, acting tramways manager of West Hartlepool Corporation, has been granted a further sum of one hundred guineas for his services during the year ended March 31.

Mr. M. W. Clark, chief of the testing department of Cammell Laird and Company, has taken up an appointment as chief electrical engineer to Messrs. Spencer and Company, of Melksham.

Lieut. R. L. Acland has been gazetted Major commanding the Derbyshire Motor Volunteer Corps. Major Acland is borough electrical engineer and tramways manager of Chesterfield.

Mr. R. T. Smith, borough electrical engineer of Leicester Corporation, has been recommended by the Tramways and Electricity Committee for an increase in salary from £900 to £1,000 per annum.

Mr. P. J. McKellen has been appointed H.M. Trade Commissioner at Singapore. Firms desirous of communicating with him should address their letters to H.M. Trade Commissioner, Singapore, Straits Settlements.

Mr. J. D. Caird, traffic manager of Halifax Corporation Tramways, has been granted leave of absence, his medical adviser having advised that it was necessary for him to have a change of air for several months.

Mr. E. R. Turton, M.P., Upsall Castle, Thirsk, a director of the North Eastern Railway Company since 1902, has been elected chairman of the Railway Clearing House in succession to Mr. H. W. L. Harford.

Mr. C. H. Wordingham, M.Inst.C.E., superintending electrical engineer to the Admiralty, will in future be known as director of electrical engineering, and his department will be entirely separate and self-contained.

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Mr. E. Kilburn Scott has been appointed consulting engineer to the British American Nitrate Company, of New York. His present address is the British American Nitrate Company, 299, Broadway, New York City, U.S.A.

Mr. R. C. Harpur, mains superintendent, has been appointed electrical engineer at Dover at a salary of £300 a year and a house. Mr. Smith has been appointed chief assistant electrical engineer at a salary of £275 a year.

Leeds Tramway Officials.—The following increases in salaries have been granted :—Mr. J. Burbidge, electrical engineer, tramways department, from £500 to £550, and Mr. A. Daggett, traffic superintendent, from £345 to £400.

Mr. G. H. Hume, who is so widely known for his valuable work in connection with the London County Council Tramways, has been re-elected chairman of the Highways Committee. **Mr. Scott** has been re-elected vice-chairman.

Mr. J. Lunn, of West Ham Corporation Tramways, has been appointed works superintendent in place of **Mr. T. C. Winfield,** who has been appointed works superintendent of Birmingham Corporation Tramways undertaking.

Corporal W. Town, Renfrewshire R.E., has been awarded the Belgian Croix de Guerre. At the outbreak of war he was employed in the shops of Paisley Tramways Company, and has been on active service for more than two and a half years.

Mr. J. S. D. Moffet has declined the appointment of deputy manager of Liverpool Corporation Tramways. The Belfast City Council on the advice of the Tramways Committee have unanimously expressed their desire that Mr. Moffet should remain and have altered the terms of his remuneration so that it will shortly amount to £1,200 per annum. It is so seldom that Belfast Corporation are able to agree unanimously upon any subject that their action in this case is a notable testimonial to the success which has attended Mr. Moffet's work in Belfast.

Presentation to Retiring Southport Manager.—The undertaking of the Southport Tramways Company, Limited, having been acquired by the Corporation, the manager, Mr. J. Lloyd, is retiring, and a presentation has been made to him on behalf of the employees of the company, and of the Birkdale Electric Supply Company, Limited. This took the form of a gold watch and chain and other gifts, together with an illunimated address signed by every member of the Southport Tramway Company's staff. Mr. Lloyd has been general manager of the company since 1880.

Mr. Albert Mackrill, chief clerk with Mr. J. Wilkinson, electrical engineer of Hull Tramways, is leaving Hull after fifteen years' service to take up an appointment at Stoke-on-Trent as commercial manager to the borough electrical engineer. Mr. Mackrill has been presented by the employees with a portion of a silver dinner service and also with a silver serviette ring for his little daughter. Mr. Wilkinson, who made the presentation, referred to the conscientious way in which Mr. Mackrill had performed his duties. He had shown tact and judgment, and sympathy with dependants of the men who had gone to the front. As a personal token of appreciation of fifteen years' service, Mr. Wilkinson has presented Mr. Mackrill with a gold watch.

Manchester Corporation Tramways.—The City Council have approved a recommendation advancing the yearly salaries to officials as follows, viz. :—Mr. James Wood, financial superintendent and assistant manager, from £600 to £750 by three annual increments of £50 each ; Mr. J. T. Oakes, traffic superintendent, from £500 to £600 by two annual increments of £50 each ; Mr. F. A. Mitcheson, accountant, from £400 to £550 by three annual increments of £50 each ; Mr. G. R. Blackburn, rolling stock superintendent, from £400 to £500 by two annual increments of £50 each ; Mr. D. G. Mallalieu, permanent way superintendent, from £350 to £400 by two annual increments of £25 each ; Mr. R. Beattie, chief claims clerk, from £350 to £400 by two annual increments of £25 each ; Mr. G. W. Hancock, parcels superintendent, from £350 to £400 by two annual increments of £25 each ; Mr. J. J. McMahon, electrical engineer, from £325, with house, coal, gas, and water, to £350 per annum with house, etc.; Mr. J. W. Hewitt, cashier, from £300 to £400 by three annual increments (one of £50 and two of £25) ; Mr. T. G. King, stores superintendent, from £300 to £350 ; Miss M. E. Hunter, ticket and cash counting superintendent, from £250 to £300 by two annual increments of £25 each ; Mr. H. Jackson, chief clerk, traffic department, from £250 to £300 by two annual increments of £25 each ; Mr. H. R. Kiernan, chief assistant, civil engineer's department, from £250 to £300 by two annual increments of £25 each ; Mr. C. H. Pepper, assistant accountant, from £235 to £250 ; Mr. Wm. Grey, chief clerk, has been appointed secretary to the department at the salary of £300, to be increased in twelve months to £350.

Mr. C. J. Spencer, general manager of Bradford Corporation Tramways, has resigned the position of assistant director (labour division) of the shipyard labour department of the Admiralty which he held for over a year, while at the same time giving necessary attention to his duties at Bradford. The following letters indicate the high appreciation with which his work at the Admiralty is regarded. Sir Alan G. Anderson who signs the first letter is controller to the Admiralty :—

Admiralty, Great George Street, S.W.
March 9, 1918.

Dear Mr. Spencer.—I regret that circumstances have compelled the Bradford City Council to ask for your release in order that you may resume your former duties, and desire to express my thanks to you for the patriotism which you have displayed in placing your services at the disposal of the Admiralty. I appreciate very deeply the great ability and zealous care with which you have so successfully carried out your duties as assistant director (labour division) of the shipyard labour department, and hope that you will allow me to have the benefit of your advice and experience from time to time in dealing with the labour problems of the department.—Yours very truly, ALAN G. ANDERSON.

The following letter from the Admiralty has been received by the Lord Mayor of Bradford :—

With reference to your letter of the 9th ult. intimating that the Bradford City Council desire the Admiralty to release Mr. C. J. Spencer, general manager of the Bradford City Tramways, in order that he may resume his duties at Bradford, I am commanded by My Lords Commissioners of the Admiralty to say that they accede to the request with great reluctance, and desire to convey their thanks to you and to the Council for their patriotic spirit in lending Mr. Spencer's services to the Admiralty for the past 13 months.

My Lords desire to record their high appreciation of the able and zealous manner in which Mr. Spencer has successfully carried out the responsible work entrusted to him as assistant director (labour division) of the shipyard labour department, and to express their regret that circumstances have compelled the Council to require him to return to Bradford. My Lords will be glad to have the opportunity from time to time of utilising the advice and experience of Mr. Spencer in circumstances where it may be greatly to the advantage of the Admiralty so to do.

We regret to record the death of **Mr. E. A. Christian,** assistant engineer to the Mersey Railway Company. Mr. Christian was previously with the Manx Electric Railway Company.

TRAMWAY AND LIGHT RAILWAY NOTES.

BRADFORD.

QUEUE DIFFICULTIES.

Although as a remedy for congestion and struggling queues have been established under compulsory powers at Bradford, it is understood that they have not proved so efficient a solution of the difficulty as was hoped. The local conditions are, in fact, such that it is impossible to line up waiting passengers in a really satisfactory way, and there appears to be insufficient staff available to regulate the crowds. Consequently the more unscrupulous individuals constantly manage to board the cars out of their proper turn.

DERBY.

FULL SERVICE RESTORED AT BUSY PERIODS.

For some time past, owing to shortage of staff and other difficulties arising out of the war, the services on the Corporation Tramways have been curtailed. At the last meeting of the Council, however, it was announced that, from March 11, the full service would be restored at the busy parts of the day. In spite of the curtailment and numerous stoppages, it was stated that the monthly return showed an increase in receipts of 24 per cent., as compared with the corresponding period of last year.

DUNFERMLINE.

THE RULE OF THE ROAD IN TRAMWAY THOROUGHFARES.

In giving his decision at Dunfermline Sheriff Court in a collision case recently, the sheriff gave a ruling as to the effect of tramway lines in regard to general traffic which states the position with great clearness. His Lordship said that the introduction of tramways had interfered to some extent with the established rule of the road. A car was tied to its course by its rails, and could only avoid an obstruction by stopping. The duty was therefore on a car driver to keep his car well under control as regarded speed. On other users of the road the duty was also laid not needlessly to obstruct the rails, and should unavoidable obstructions be created, to take all reasonable steps to warn the tramcar.

HULL.

COSTLY FREE RIDES OF CORPORATION EMPLOYEES.

Hull Corporation is finding somewhat expensive the policy of allowing employees free travel on the tramways. The Tramways Committee have pointed out that this concession costs the ratepayers £700 a year. The practice is for the various departments to issue prepaid tickets, and measures for limiting their use have now been decided upon.

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NOTTINGHAM.

REMARKABLE INCREASE IN TRAFFIC—PROPOSED INCREASE OF PLANT.

Mr. R. H. Swain, chairman of the Nottingham Corporation Tramways Committee, alluding at the dinner of the Rotary Club to criticism of the tramway services, said he was afraid the public lost sight of the fact that the cars were carrying between 250,000 and 300,000 more passengers a week than was the case a year ago, and that in spite of enormous difficulties due to war-time conditions. Over 600 men had joined the colours or had been liberated for war service. As regards women conductors, Mr. Swain said that he knew there were grounds for complaint in some cases; in fact, 132 women were dismissed last year for neglect of duty, but all things considered they had done remarkably well. At a meeting of the Corporation Tramways and Electricity Committee a report was received from a deputation which had interviewed Sir John Snell on the subject of the provision of additional plant at the generating station. Sir John Snell had intimated that his considered report would be sent at the end of the first week in March.

NEWPORT.

THE TRACK IN THE BEST STATE OF REPAIR—VISIT OF THE TRAMWAYS (BOARD OF TRADE) COMMITTEE.

At a meeting of the Electricity and Tramways Committee it was reported that Newport was one of the twelve great towns where the tramway permanent way is in the best state of repair. Representatives of the Board of Trade Tramways Committee have lately inspected the undertaking, with a view to the transfer elsewhere of track and equipment on unessential routes.

PONTYPRIDD.

ILLUMINATED CAR DURING "BUSINESS MEN'S WEEK."

In accordance with a request made by the local War Savings Committee, the Pontypridd Electricity and Tramways Committee unanimously decided to arrange for one of their cars to be specially illuminated, and to tour the district each evening during the "Business Men's Week." The car was also used by the War Savings Committee as a platform from which speeches were made.

WEST HARTLEPOOL.

PROPOSED EXTENSION OF TRAMWAYS.

At a meeting of West Hartlepool Council, the Town Clerk and the borough engineer presented a report with reference to an interview with the Tees Conservancy Commissioners as regards the provision necessary for traffic likely to arise over the new road in course of construction. It was resolved that application should be made to extend the tramways from the borough of Seaton Carew to Port Clarence, on the ground that the claims of West Hartlepool were superior geographically to those of any other authority.

SOUTHAMPTON.

RECORD CONTRIBUTION TO THE RATES.

The Tramways Committee have decided to make a contribution to the rates of at least £8,000. Some members were in favour of a larger appropriation, but in view of the fact that in the next few months the expenditure on rolling stock is estimated at £3,000, Alderman Dunsford, chairman, held that it would be better to make provision at once for this abnormal expenditure. The tramways have had a remarkably good year, and the contribution to the rates forms a record.

DICK-KERR TURBINE FOR GLASGOW.

An important contract for generating plant has been awarded to Messrs. Dick, Kerr and Company, Limited, by Glasgow Corporation for the new power-station in course of erection at Dalmarnock. The contract includes a turbo-alternator set, with condensing plant and step-up transformers designed for a continuous output of 18,750 KW. The turbine will be a single-unit standard Dick-Kerr impulse type machine, arranged to run at 1,500 revolutions per minute, and will operate on steam at 250 lb. per square inch pressure at the stop valve, superheated to 650 deg. Fahr., and exhaust into a vacuum of 29·1 in. All overloads will be dealt with by automatic governor valves without recourse to hand operation or by-pass valves, high pressures and temperatures being confined to the cast-steel governor valves and inlet castings.

The turbine will be direct coupled to a 6,500-volt, 25-cycle, 3-phase Dick-Kerr alternator, having a maximum continuous rating of 24,000 K.V.A. at 80 per cent. power factor. The machine will be of the self-ventilating type, provided with fans on the rotor drawing the cooling air through a wet air filter of the Heenan and Froude type. An exciter of the overhung type will be provided. The alternator will be electrically connected to a bank of three Westinghouse single-phase oil-circulated water-cooled transformers, stepping up the pressure from 6,500 to 20,000 volts. In connection with these transformers, a separate oil cooler and motor-driven oil-circulating pumps will be provided. The turbine will exhaust into a standard Willans and Robinson condenser, having a surface of 26,000 square feet. The air extraction plant in duplicate will be on the well-known Willans rotary water-jet system, which possesses the merit of great simplicity and ease in operation combined with great evacuation power. The vacuum will be 29·1 in. with a 30 in. bar. The extraction pumps, also in duplicate, will be of the usual centrifugal type.

CONTRACTS AND ORDERS.

Glasgow Tramways Committee has accepted the tender of Messrs. Thomas Bolton and Sons for rail bonds.

The Anti-Attrition Metal Company have an order for axle keeps and axle bearings from Salford Corporation Tramways.

Hadfields, Limited, and Cammell Laird and Company, Limited, have orders for steel tires from Salford Corporation Tramways.

The Clay Cross Company have received an order from Glasgow Corporation for two sets of fuel economisers for Pinkston power-station.

J. W. Courtenay, Limited, of Amberley House, Norfolk Street, London, W.C., have been appointed sole advertising contractors to Coventry Corporation Tramways.

Plymouth Council propose to apply again to the Board of Trade for sanction to borrow £8,600 for eight new cars. The Corporation sinking fund is to provide the money.

Johannesburg Municipal Council have accepted the tender of Hadfields, Limited, for 300 steel tramway tires at £6 5s. 6d. each, subject to fluctuations corresponding with the cost of manufacture, etc.

The British Thomson-Houston Company's tender has been accepted by Derby Electricity Committee for switchgear for a 4,000-KW. turbine, two feeder panels, and inter-connection switchgear.

Newport Electricity and Tramways Committee have recommended the acceptance of the tender of Messrs. Fraser and Chalmers for a 3,750-KW. turbo-alternator, the alternator to be supplied by the General Electric Company.

PATENT LIST.

Abstracted for "The Tramway and Railway World" from the Official Journal of Patents.

***** If the inventions have been communicated the names of the communicators are given below in italics.**

APPLICATIONS FOR LETTERS PATENT.

Electric signalling apparatus (3,351)—H. E. Crammond and C. E. Falconbridge.

Means for controlling variable speed gears (3,596)—J. D. Dean.

Means for preventing electric conductors of traction systems being coated with ice (3,381)—P. C. Edwards.

Motor vehicles (3,473)—G. Entwistle.

Locomotive sanding devices (3,384)—H. Fairbrother (*White American Locomotive Sander Company*).

Driving and controlling device for automobiles (3,642)—H. G. C. Fairweather (*A. Leffler*).

Driving gear for automobiles (3,323)—J. Fowler and Company and H. Livsey.

Internal combustion engines for motor vehicles (3,559)—R. E. Green.

Hydraulic lifting jacks (3,442)—E. Johnson and Tangyes, Limited.

Steering gear for four-wheeled vehicles (3,324)—H. Livsey.

Speed-changing, reversing and braking gearing (3,713)—Menco-Elma Syndicate and G. Pollard.

Speed indicators for vehicles (3,339)—H. Meyer.

Permanent way of railways and tramways (3,525)—J. A. Roberts and United Alkali Company.

Locking device for securing railway chair keys (3,760)—F. Chambers.

Speed indicators (4,121)—T. W. K. Clarke and C. J. H. Mackenzie-Kennedy.

Gear trains (3,953)—L. M. Douglas, Sir C. A. Parsons, and S. S. Cook.

Variable speed mechanism for motor vehicles (3,805)—E. Feuerheerd.

Motor vehicles (3,861)—T. Glover.

Variable speed gear and clutch (3,737)—A. E. Green.

Variable speed gears (4,188)—A. E. Hudd and O. Thornycroft.

Variable speed gear (3,904)—G. H. Kenyon and J. Ruscoe and Company.

Electro-mechanical power transmission system (4,131)—Leyland Motors, Limited and J. G. P. Thomas.

Motor vehicles (3,945)—F. F. Mote.

Brake controlling devices for electro-magnetic brakes (4,091)—Waygood Otis, Limited (*Otis Elevator Company*).

Change speed gears (4,193)—J. Klaus-Ott.

Automatic block system for trains (4,137)—C. A. Palmer and A. H. Payne.

Control for gas-driven vehicles (4,021)—South Metropolitan Gas Company and R. C. Macdonald.

Railway sleepers and chairs (3,781)—E. S. Webb.

Means for supporting rail joints (4,415)—F. Chambers.

Brakes for railway vehicles, etc. (4,368)—J. N. Curtis and E. D. Sampson.

Motor vehicles (4,342)—Edison Accumulators, Limited, and J. F. Monnot.

Brakes for motor vehicles (4,423)—J. J. Elias.

Steam or other self-propelled road vehicles, etc. (4,592)—W. Fairclough.

Gas containers or reservoirs for motor vehicles (4,701)—J. B. Mitchell.

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STEAM AND HYDRAULIC
ENGINE PACKING
MANUFACTURERS
(Flax, Asbestos and Cotton)
And all Engine Room Stores
ATTWATER & SONS
Hopwood Street Mills, PRESTON
Telegraphic Address: "Attwaters, Preston."

STEAM CONDENSING PLANT.
VACUUM PUMPS AND EVAPORATORS.
MIRRLEES WATSON
THE MIRRLEES WATSON CO. LTD., GLASGOW

For TRAMS AUTOMOBILES, &c.
For 'BUSES, AIRCRAFT, &c.
TRIPLEX SAFETY GLASS
Catalogue mailed on request.
The Triplex Safety Glass Co. Ltd.
1, Albemarle St., London, W.1
Contractors to H.M. Government.

Method of supporting overhead wires of electric tramways and railways (4,652)—S. T. Quilliam.
Lubricating rear axle and engine of motor cars, etc. (4,223)—C. H. Waitman.
Variable gearing (5,066)—J. H. Bowhill.
Rail joints (5,042)—E. Henderson and J. Henderson.
Semaphore direction indicating apparatus for use on road vehicles (4,981)—W. Kellett.
Variable speed gears (4,873)—R. Lindsay.
Method of operating motor vehicle, etc., lifting jacks (4,982)—R. S. Osborne.
Clutches for motor vehicles (5,008)—J. D. Siddeley.
Securing rails, chairs, tie-plates, etc., to railway sleepers (5,174)—J. S. Todd.
Railway sleepers (5,175)—J. S. Todd.

Specifications Published.

1916.

Tie bars for tramway tracks (7,962—*100,598*)—A. Devrin.
Speed indicating devices for motor vehicles (15,199—*113,455*)—A. A. Benson and others.

1917.

Variable speed gearing (1,512—*112,979*)—A. J. H. Haddan (*A. E. Osborn*).
Motor vehicles (1,872—*112,998*)—C. H. Crawley, M. E. Starkey, and W. E. Clarke.
Pneumatic tires for motor vehicles (3,089—*113,018*)—J. Briggs.
Frames of motor vehicles (3,114—*113,020*)—R. McDougall.
Pneumatic and other tires for motor vehicles (1,782—*113,129*)—W. C. Platts and Gofa Tyre Company.
Mechanically operated signal indicating device (2,287—*113,151*)—A. E. T. Dudgeon.
Electric couplings (3,615—*105,227*)—H. de La Valette.
Tipping mechanism for motor wagons or lorries (3,887—*113,168*)—F. E. Ellis and R. H. B. Ellis.
Safety or life guards for motor vehicles (5,208—*113,186*)—F. A. Poupard.
Continuous brake apparatus for trains (5,565—*113,189*)—H. F. Ward.
Construction and top deck seating arrangements of omnibuses (8,168—*113,213*)—W. J. Hickman.
Electro-pneumatic braking systems (12,724—*113,235*)—W. V. Turner.
Means of controlling and retaining gas bags or reservoirs upon motor vehicles (15,041—*113,244*)—R. Blakoe.
Electro-magnetic brake (2,103—*113,308*)—H. V. James.
Insulating devices for the live rails of electric railways (5,305—*113,362*)—W. E. Windsor-Richards and E. T. Brooks.
Station indicators (13,240—*113,409*)—L. Barradell.
Railway signalling apparatus (4,225—*113,520*)—S. P. Wood and McKenzie and Holland.
Speed indicating devices (9,949 and 9,950—*107,979* and *107,980*)—H. Petit.

Colonial and Foreign Tramways Traffic Returns.

NAME OF COMPANY.	1917. WEEKS ENDED.					1918. WEEKS ENDED.					AGGREGATE.		
	Mar. 3.	Mar. 10.	Mar. 17.	Mar. 24.	Mar. 31.	Mar. 2.	Mar. 9.	Mar. 16.	Mar. 23.	Mar. 30.	Wks.	1918.	Increase or Decrease.
	£	£	£	£	£	£	£	£	£	£		£	£
Anglo-Argentine	52.136	52.595	52.831	52.057	52.762	56.938	57.977	56.612	56.890	53.346	13	704.907	+ 44.354
Calcutta ... ... Rs.	69.485	60.477	68.670	65.175	63.517	75.751	67.174	75.884	72.275	64.889	13	920.876	+ 43.671
Madras ... ... Rs.	28.511	(2 weeks)	34.167	(2 weeks)	...	33.553	(2 weeks)	39.530	(2 weeks)	...	36	188.724	+ 20,620
Pernambuco	3.387	3.400	3 365	3.621	3.513	4.347	4.726	4.726	4.615	4.341	13	60.384	+ 14.213

Companies Issuing Monthly Statements.

	1916.			1917.			1917.			1918.			Wks.	AGGREGATE.	
	October.	Nov.	Dec.	Jan.	Feb.	March.	October.	Nov.	Dec	Jan.	Feb.	March.		1917-18.	+ or −.
	£	£	£	£	£	£	£	£	£	£	£	£		£	£
Ballarat & Bendigo ..	3.430	3.090	3.981	3.521	...	...	3.552	3.179	4.127	3.771	...	...	44	36.742	+ 610
Brazilian Traction Mlrs	7262000	7160000	7312000	7266000	...	...	3006000	7695000	8069000	7837000	...	...	4	7.837.000	+ 571.000
Brisbane	32.760	26.740	32.910	33.020	29.800	...	33.580	32.900	35.019	34.500	32.009	...	8	66.509	+ 3.689
British Columbia $	445.263	472.767	496.959	493.315	...	...	191.964	525.629	555.555	559.569	...	...	30	3.483,229	+ 324.529
Buenos Ayres Lacroze	39.670	39.133	40.106	38.142	35.977	41.337	39.067	39.679	40.901	38.902	34.398	42.647	39	346.421	+ 69
Burma	29.768	26.824	32.551	23.802	22.912	...	28.955	27.761	26.224	25.429	22.985	...	30	184.236	− 217
Cape Town	14.238	...	...	18.440	...	...	17.128	16.522	19.803	19.707	...	...	—	—	—
Carthagena & Herrerias	2.539	2.252	2.399	3.982	3.223	2.955	2.805	3.932	4.424	4.011	4.031	5.316	13	10.160	+ 3.198
Cordoba	13.533	12.836	12.327	12.432	...	...	12.481	13.339	13.406	12.845	...	...	43	134.966	− 641
East India	2.080	1.942	2.120	1.836	1.570	1.647	1.229	871	1.099	1.176	1.318	1.729	34	10.496	− 5.744
Kalgoorlie	2.716	...	...	...	...	...	2.795	...	...	...	...	...	43	26.923	+ 940
La Plata	4.434	3.140	4.437	4.315	4.092	4.528	4.069	3.741	4,606	4.711	4.745	5.347	13	14.803	+ 1.867
Lima	33.303	33.608	37.171	36.841	34.228	...	37.537	37.466	41.697	43.536	41.913	...	8	85 449	+ 14.380
Manaos ... ... Rs.	...	142.858	158.110	...	...	...	158.078	146.047	150.091	...	...	...	—	—	—
Mexico ... ... $	...	...	...	...	...	...	...	...	...	...	...	...	—	—	—
Monte Video	28.729	28.404	31.364	33.341	32.304	31.979	30.153	31.060	34.025	36.016	34.573	36.659	21	172.333	+ 14.941
Peruvian ... ... $	945.590	925.820	930.842	935.130	844.770	1017000	1047220	1034790	1101090	1189350	925.410	1119530	39	9.322 560	+ 1.020,168
Port Elizabeth	3.131	...	...	4.498	...	...	3.885	3.807	4.920	4.779	...	...	—	—	—
Rangoon	5.043	5.033	4.904	4.633	4.605	...	5.667	5.358	5.438	5.361	5.662	...	8	11.023	+ 1.785
Toronto ... ... $	907.460	911.829	...	1002469	...	...	1043886	1052000	...	1.068319	...	...	4	1.068.319	+ 65.850
Winnipeg ... $	278.817	282.899	...	319.945	...	...	301.722	305.881	...	334.642	...	...	4	334 642	14.697

(*Continued on page 238*)

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TRAFFIC RETURNS—*continued.*

Tramways and Omnibus Undertakings in the United Kingdom.

NAME OF COMPANY OR CORPORATION.	1917. WEEKS ENDED.					1918. WEEKS ENDED.					AGGREGATE.		
	Mar. 3.	Mar. 10.	Mar. 17.	Mar. 24.	Mar. 31.	Mar. 2.	Mar. 9.	Mar. 16.	Mar. 23.	Mar. 30.	Wks.	1918.	Increase or Decrease.
	£	£	£	£	£	£	£	£	£	£		£	£
Aberdare U.D. Council	394	388	370	390	421	443	434	461	444	497	51	23.168	+ 2.650
Aberdeen Corporation	1.780	1.772	1.676	1.785	1.794	2.172	2.220	2.204	2.127	2.257	43	93.526	+ 12.551
Accrington Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Ayr Corporation	259	249	260	265	262	331	315	342	352	366	46	20.557	+ 2.851
Bath Electric	*	...	...	...	...	...	...	...	...	...	—	—	—
Belfast City	5.477	5.516	5.553	5.585	5.488	7.288	7.124	7.363	7.314	7.812	52	349.232	+ 54.744
Birkenhead Corporation	1.504	1.486	1.542	1.543	1.537	1.916	1.885	1.893	1.946	1.998	52	96.686	+ 16.762
Birmingham Corporation	16.460	15.489	16.674	16.427	...	20.399	20.372	20.600	20.749	...	51	960.251	+147.035
Birmingham Corp. Motor Omnibuses	869	746	886	842	...	1.181	1.163	1.226	1.268	...	51	55.449	+ 6.390
Blackburn Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Blackpool and Fleetwood	*	...	...	...	...	...	...	...	...	...	—	—	—
Blackpool Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Bolton Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Bournemouth Corporation	1.731	1.633	1.838	1.742	1.771	2.295	2.572	2.523	2.718	3.365	52	132.428	+ 18.179
Bradford Corporation	6.138	5.632	7.007	6.454	6.390	7.190	7.003	5.775	4.986	7.283	52	392.389	+ 44.226
Brighton Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Bristol	*	...	...	...	...	...	...	...	...	...	—	—	—
Burnley Corporation	1.550	1.442	1.622	1.580	1.544	1.931	1.995	1.959	2.080	2.444	—	—	—
Burton-on-Trent Corporation	254	262	253	254	250	373	367	361	374	383	52	17.129	+ 2.786
Bury Corporation	1.370	1.252	1.422	1.372	1.117	1.572	1.666	1.665	1.740	1.981	52	85.778	+ 12.650
Cardiff Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Chatham and District	1.169	1.106	1.110	1.146	1.082	1.179	1.161	1.186	1.164	1.290	13	14.281	+ 647
Chesterfield Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Colne Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Cork Electric	462	437	468	495	465	587	563	623	655	669	13	7.282	+ 1.613
Croydon Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Derby Corporation	1.000	973	1.029	989	991	1.231	1.218	1.229	1.306	1.355	52	63.804	+ 6.320
Dover Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Dublin and Lucan	*	...	...	...	...	...	...	...	...	...	—	—	—
Dublin United	5.941	5.609	6.066	5.978	5.891	7.305	6.955	7.240	8.125	7.504	13	91.638	+ 17.368
Dundee City	1.335	1.285	1.246	1.292	1.320	1.587	1.547	1.565	1.558	1.632	45½	70.788	+ 8.581
East Ham Corporation	1.170	1.152	1.114	1.203	1.210	1.270	1.262	1.330	1.340	1.367	52	70.740	+ 5.099
Exeter Corporation	344	277	291	302	...	364	344	377	373	...	51	20.106	+ 301
Gearless Motor 'Buses	*	...	...	...	...	...	...	...	...	...	—	—	—
Glasgow Corporation	24.072	23.288	23.806	24.246	24.362	26.824	26.794	27.650	28.130	27.691	43½	1.149.600	+131.277
Glossop (Urban Elec. Supply Co.)	127	115	132	129	116	173	172	178	186	204	13	2.331	+ 715
Halifax Corporation	1.852	1.799	1.709	1.957	1.915	2.215	2.125	2.225	2.311	2.649	51½	124.380	+ 19.318
Halifax Corp. Motor Omnibuses	44	43	42	48	48	51	51	48	52	57	51½	2.551	+ 30
Hastings and District	980	829	968	...	...	905	1.050	1.093	...	...	11	10.521	+ 841
Huddersfield Corporation	2.684	2.457	2.703	2.684	2.686	3.135	3.102	3.208	3.350	3.306	52	166.745	+ 21.701
Hull Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Ilford U.D. Council	618	597	618	613	608	763	800	793	807	839	52	40.039	+ 5.671
Ilkeston Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Ipswich Corporation	384	358	378	376	362	621	598	554	599	683	52	34.234	+ 9.092
Isle of Thanet	286	219	249	247	223	162	167	194	211	218	26	4.540	— 1.883
Kilmarnock Corporation	169	159	165	166	170	213	216	223	223	236	45½	9.489	+ 1.544
Lanarkshire	2.442	2.365	2.390	2.442	2.471	3.339	3.243	3.347	3.457	3.464	13	39.297	+ 9.072
Lancashire United	1.788	1.741	1.781	1.962	1.880	2.655	2.522	2.596	2.577	2.682	13	31.147	+ 9.539
Leeds City	9.353	8.802	9.506	9.532	9.517	11.124	10.930	11.045	11.454	11.260	52	574.801	+ 69.840
Leicester Corporation	3.147	3.108	3.242	3.226	3.201	4.217	4.114	4.251	4.324	4.435	—	—	—
Leith Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Leyton U.D. Council	1.577	1.540	1.534	1.618	1.603	1.721	1.693	1.779	1.786	1.921	52	96.425	+ 13.294
Liverpool Corporation	14.296	13.589	14.184	14.291	14.294	16.890	16.484	16.733	17.296	17.198	12½	211.315	+ 33.147
Llandudno and Colwyn Bay	186	167	197	194	...	256	242	270	272	...	16	3.805	+ 836
London County Council	45.725	46.143	45.055	47.570	46.993	52.854	53.047	55.403	54.787	55.945	51½	2.835.276	+401.989
London General Omnibus	*	...	...	...	...	...	...	...	...	...	—	—	—
London United	*	...	...	...	...	...	...	...	...	...	—	—	—
Lowestoft Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Maidstone Corporation	172	177	179	187	384	246	226	251	251	255	52	12.881	+ 1.932
Manchester Corporation	18.243	17.363	18.563	18.418	18.345	23.318	23.041	23.695	24.341	24.366	52	1.114.045	+147.750
Metropolitan Electric Tramways	*	...	...	...	...	...	...	...	...	...	—	—	—
National Steam Car	*	...	...	...	...	...	...	...	...	...	—	—	—
Nelson Corporation	207	174	194	...	...	264	231	244	...	...	50	11.869	+ 1.394
Newcastle-on-Tyne Corporation	6.934	6.667	6.912	7.166	6.957	8.503	8.400	8.450	8.845	8.807	52	416.192	+ 65.622
Newport (Mon.) Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
New St. Helens and District	977	1.015	1.020	1.102	1.032	1.332	1.287	1.333	1.328	1.429	39	53.906	+ 12.676
Northampton Corporation	687	646	665	693	683	960	853	911	916	947	52	44.360	+ 7.262
Nottingham Corporation	3.718	3.655	3.717	3.814	3.780	4.868	4.650	4.802	4.782	5.150	52	235.484	+ 34.690
Oldham Corporation	2.311	2.199	2.432	2.081	2.177	2.855	2.950	3.030	3.180	3.209	1	3.209	+ 741
Portsmouth Corporation	2.198	2.035	...	...	...	2.648	2.581	...	...	...	—	—	—
Preston Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Provincial	*	...	...	...	...	...	...	...	...	...	—	—	—
Reading Corporation	841	788	788	814	813	1.146	1.088	1.203	1.147	1.253	52	55.829	+ 11.660
Rhondda Tramways	1.350	1.283	1.266	1.374	1.384	1.606	1.553	1.723	1.622	1.728	13	19.545	+ 3.432
Rochdale Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Rotherham Corporation	1.569	1.574	1.631	1.629	...	1.901	2.000	1.981	2.046	...	52	95.497	+ 14.581
Salford Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Sheffield Corporation	10.970	10.452	11.249	11.196	10.725	12.854	13.008	12.916	13.712	12.785	52	637.261	+ 85.366
Southampton Corporation	1.559	1.554	1.532	1.632	1.545	2.252	2.209	2.305	2.262	2.362	51½	108.568	+ 23.089
Southend-on-Sea Corporation	637	615	597	641	603	644	640	698	676	707	52	44.266	— 402
South Metropolitan Tramways	*	...	...	...	...	...	...	...	...	...	—	—	—
South Shields Corporation	794	775	779	821	811	1.054	1.029	1.014	1.076	1.132	52	50.874	+ 7.442
Sunderland Corporation	1.502	1.554	1.519	1.565	1.410	2.031	2.039	1.943	2.091	2.021	52	97.921	+ 12.719
Sunderland District	619	653	572	610	599	872	...	...	...	901	21	17.232	+ 4.174
Swindon Corporation	206	205	207	216	...	288	268	293	284	...	50½	13.918	+ 3.500
Torquay Tramways	489	409	465	509	463	683	613	715	755	801	13	8.410	+ 2.753
Tramways (M.E.T.) Omnibus Co.	*	...	...	...	...	...	...	...	...	...	—	—	—
Tyneside Tramways and Tramroads	645	613	633	...	...	897	847	895	...	...	11	8.502	+ 2.168
Wallasey Corporation	1.169	1.112	1.191	1.189	1.195	1.472	1.437	1.484	1.564	1.648	52	81.057	+ 11.880
Walsall Corporation	770	734	822	840	803	1.118	1.099	1.131	1.134	1.387	52	53.117	+ 1.067
Walthamstow U.D. Council	958	928	948	991	1.029	1.125	1.110	1.200	1.236	1.318	52	63.440	+ 8.365
Warrington Corporation	501	491	479	494	...	770	736	739	725	...	51	31.239	+ 5.821
West Ham Corporation	3.022	3.081	3.094	3.151	3.905	3.592	3.614	3.733	3.683	3.905	51½	189.241	+ 24.867
Wigan Corporation	1.647	1.591	1.633	1.755	1.710	2.200	2.136	2.212	2.198	2.355	51½	107.260	+ 20.015
Wolverhampton Corporation	*	...	...	...	...	...	...	...	...	...	—	—	—
Yorkshire (West Riding)	1.862	1.737	1.928	1.799	1.766	2.496	2.287	2.259	2.427	2.343	13	30.437	+ 7.168

* TRAFFIC RETURNS SUSPENDED.

Owing to the European war, the Government have taken over the railways of Great Britain as from August 4, 1914, and the issue of traffic returns has been suspended. Consequently the traffic returns of the electric railways which usually appear on this page cannot be given.

The Publication of the Traffic Returns of the Tramways marked with an asterisk in the above table have also been suspended during the war.

TRAMWAY DIRECTORIES.

A useful feature of this issue is the directory of electric railways and electric tramways which will be found among the advertising pages. This directory contains the names of the chief officials and the principal particulars relating to each undertaking.

THE TRAMWAY AND RAILWAY WORLD

can be obtained, post free, at the following rates:

For the United Kingdom—
Twenty-five Shillings per annum (including 64 issues, of which 12 are large illustrated numbers).

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DAIMLER "REASONS WHY"

Addressed to Prospective Purchasers of Commercial Motor Vehicles.

The Scales that Weigh Merit.

IT is an axiom of business that nothing is sold below value. The commercial motor vehicle industry offers no exception to this universal rule. There is a wide variation in the Prime Cost of lorries of different manufacturers, but the principle cannot vary—no vehicle can do more than its quality permits.

The footrules and yardsticks that measure values, the scales that weigh merit, are RESULTS. A commercial motor vehicle is of value only in proportion to its ability to give service. Everybody expects MORE than cheapness can supply.

Prospective users of motor vehicles must learn to discriminate between Ownership and Serviceship. The siren's song of "good enough" leads to the rocks of disaster and disappointment. It is safe to say that the penalty increases as the price decreases.

A Daimler is always WORTH the price demanded. It pays back what you put into it. There can be no extravagance in paying ENOUGH to get the best.

Daimler

Write for the booklet "Actual Experience" and then place your name on our priority list.

The Daimler Company, Ltd.
Coventry

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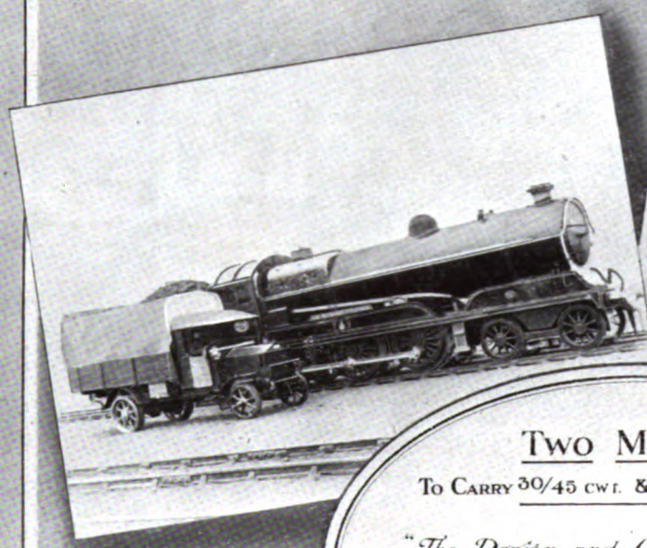
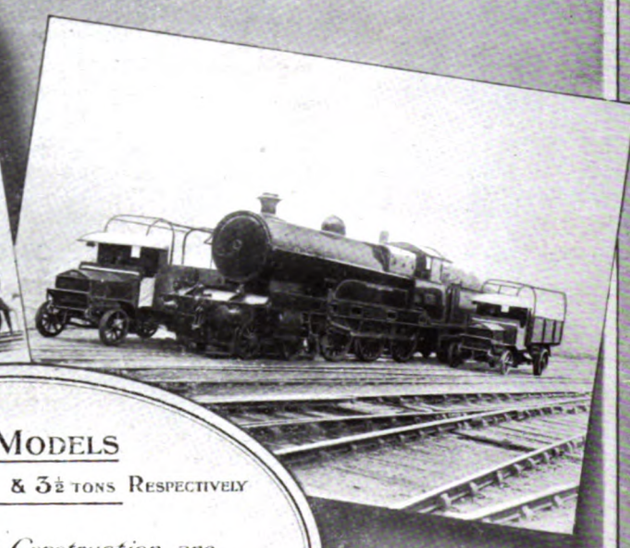
NAPIER

MOTOR VEHICLES.





TWO MODELS

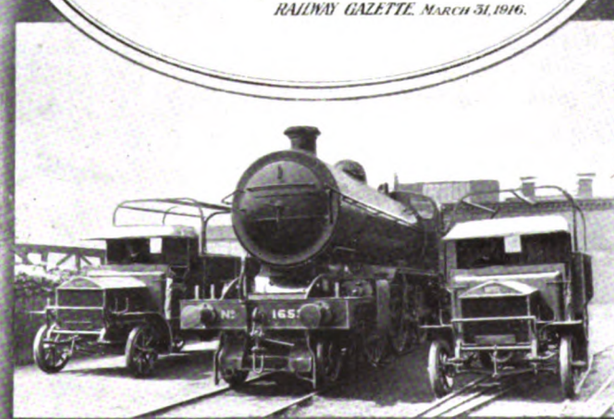
To Carry 30/45 cwt. & 3½ tons Respectively

"The Design and Construction are Throughout of a Character, which it would be Exceedingly Difficult, if not Impossible, to Improve Upon."

RAILWAY GAZETTE, March 31, 1916.

IN PEACE

USED BY THE LARGEST CARRYING COMPANIES AND COMMERCIAL HOUSES.



IN WAR

USED BY THE BRITISH AND ALLIED GOVERNMENTS.

D·NAPIER & SON LTD.

WORKS
ACTON, LONDON. W

14, NEW BURLINGTON ST. LONDON. W.

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The inability of the Committee of the Automobile Association to see eye-to-eye with those who are desirous of establishing a united council of motor users, producers, and distributors has led to a regrettable incident. In a letter to the Press defining the position taken up by his committee, the secretary of the A.A. endeavoured to give illustrative examples in order to prove the difficulty or impossibility of achieving union over the whole of so broad a field. For this purpose he dealt with the question of road damage and maintenance, and made a statement to the effect that heavy motor vehicles and tractors do more harm to the roads than any other class of traffic; and he worded his phrase so as to imply that no commercial vehicles contributed anything towards road maintenance. This, of course, is entirely incorrect, and in a subsequent letter he has modified the statement to some extent, confining this particular announcement to the steam tractor. It was unfortunate that his first letter was so ambiguously worded as to make it possible for anyone to suppose from it that they could quote a well-informed authority to show that commercial motor vehicles do not bear their share of the cost of road maintenance. However, we need not labour this point now that the secondary accusation has been withdrawn; but the main accusation levelled against commercial vehicles as regards road damage is clearly open to question. Injury to roads may be due to any one or more of many causes. It seems to be extremely rash to invite controversy by dogmatic assertions on a point of this kind, especially as the controversy, if it were aroused, could only serve to strengthen the hands of those who would like to see every class of motor taxed to excess. We were under the impression that the A.A. did not exclude commercial vehicle owners from its membership. Its letter heading makes mention of a commercial vehicle department; but we fail to see how the existence of anything of the kind can be reconciled with the views expressed on behalf of its committee.

* * * * * *

On the broad question of the desirability of union and the means of achieving it, there have been some interesting developments. It is ascertained that those who have already expressed themselves as favourable to the formation of the United Council are perfectly open to negotiation and compromise as to the exact terms of reference of the Council and the method of getting the work done. Consequently we still hope that the objections urged in the first instance by the A.A. will be overcome. Meanwhile, a very interesting proposal comes from the users of heavy road vehicles of all kinds. These are already well organised on a joint committee of their own. Their idea is substantially that similar sectional organisations should be completed in other quarters, before a serious endeavour is made to achieve effective union over a wider field. We may, perhaps, classify all the interests concerned in four groups:—

(1) *The users of heavy vehicles*, who are already organised for joint action among themselves.

(2) *The users of private cars and motor cycles.* Here we have the Royal Automobile Club, the Automobile Association, and the Auto Cycle Union, and it must be admitted that up to the present there has been a marked lack of any willingness among these bodies to co-operate in any very effective degree, even though the A.C.U. is in a sense a subsidiary organisation of the R.A.C.

(3) *The manufacturers.* Here we have the British Association and the old society—the Society of Motor Manufacturers and Traders; also the Cycle and Motor Cycle Manufacturers' Union. The organisation of this group apparently presents no difficulties, if it is not already complete.

(4) *The distributors.* Here we have the Motor Traders' Association and the Agents' Section. There again there should be no difficulty in completing the sectional organisation; in fact, it may be said to be already achieved.

* * * * * *

Now if each one of these four groups were to elect its own panel or section and if the four sections were to meet to discuss matters of common interest, we should have the machinery and the personnel of a joint council, much the same as that already proposed, but arrived at in a rather different way. The supporters of the principle have already definitely proposed that users should have 24 votes, manufacturers 12, and distributors 6. It would only remain for the users to settle among themselves how many votes should go to the commercial section and how many to private owners. The joint committee representative of heavy motor interests would then elect the required number of representatives, and it would remain for the R.A.C., the A.A., and the A.C.U. to arrange a joint meeting, at which the number of representatives to be allocated to each of these three bodies would have to be determined. This, so far as we can see, is the only point at which the whole scheme is liable to break down, and provided that reasonable counsels prevail any such breakdown ought to be avoidable.

Reverting to the perennial subject of motor fuels, we unfortunately have to chronicle a position which is in no respect better and is in some respects worse

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MOTOR TRAFFIC.

than that of a few weeks ago. We have recognised for a long time that the petrol shortage is not likely to be overcome and may even be expected to grow more acute so long as aerial warfare continues to develop. Moreover, anything in the nature of open fighting entails increased demands on our petrol supplies for the use of our motor transport vehicles. A few months ago we were given to understand that by consuming coal gas users were doing the State something of a service. Now the announcements of the Coal Controller are of quite a different complexion. Coal gas is already unobtainable for motors in certain quarters, and the restrictions upon its use are likely to increase. The Road Transport Control Board has set up a Central Advisory Committee which may be able to relieve the position to some slight degree by bringing expert knowledge to bear on the problem of increasing efficiency in the use of road vehicles and so performing a given quantity of work with a smaller total mileage and a smaller expenditure of fuel. Local committees for some 13 areas into which the country is for this purpose divided, will presumably be competent to help in the same direction. All this, however, is more likely to mean an increase in the work done with the available machines than a decrease in the fuel consumption. All things considered, it is undoubtedly necessary to review every possible source of home fuel supply, independent of the availability of shipping tonnage. Amongst other things, it is probable that renewed attention will be given to alcohol. This fuel, as we have already maintained, cannot be manufactured at the cheapest possible rates in this country, partly because of our climate and partly because of our excise restrictions. The difficulties at the present moment are abnormally great, because the most obvious source of supply is to be found in potatoes, and we cannot spare these for distillation in quantity. It has been suggested from time to time that alcohol could be obtained by suitable treatment of peat. More concrete evidence is, however, available in favour of the view that we could create at least some supplies by making full use of the waste products resulting from the rather wholesale destruction of many of our woods and forests. In Scandinavia very considerable quantities of fuel alcohol have been obtained by treating wood pulp or sawdust with sulphuric acid. Alcohol manufactured in this way has been used with some success as a fuel for motor cars, during lengthy trials conducted in Sweden. On the whole, it would seem that although prospects of obtaining large quantities are not very bright, the possibilities of home-produced alcohol should now be reviewed. In undertaking this work we have at least the encouragement of knowing that what we do under compulsion and merely as a temporary measure, so far as this country is concerned, may react later on to the great benefit of some of our Colonies in which alcohol crops can be grown by cheap labour and upon cheap land and upon a scale that will render the costs of distillation upon the spot extremely low. Of course, the results of anything we may do are largely dependent on the position in the matter of excise regulations. If we are to get any help at all from alcohol, these must be relaxed at least for the time being.

In offering a prize of £1,000 for the best invention enabling coal gas to be used with advantage as a propellant of motor cars and cycles, the A.A. is not likely to bring to light any epoch-making invention. Our reason for holding this view is that the competition closes at the end of this year, and at the present moment the difficulties in the way of obtaining raw materials and manufacturing the necessary fittings and devices are so great as to be highly discouraging to inventors. The regulations of the competition are, however, interesting as indicating what, in the opinion of the A.A., the motorist expects of his coal gas installation. His minimum requirement as regards quantity is reasonably put at the equivalent of three gallons of petrol. This is to be carried in a space not exceeding 19 cubic feet, which means that the pressure must be not less than about 40 atmospheres, or 600 lbs. per square inch. The weight of the installation must not exceed 140 lbs., and the cost to the motorist must be limited to £20, with the alternative of an annual hiring charge of £5. Apparently, the invention must include means of charging the containers, and this is where difficulties seem particularly likely to arise, because it is stipulated that the expense of establishing and working this plant must be such as not to add to the cost of fuel to the motorist more than the equivalent of threepence a gallon. We are not quite clear as to whether it is assumed that the motorist will instal his own plant. Obviously, however, he must at times take fuel from retailers, and the question of how much extra it will cost him seems to be dependent upon what is a working profit from the retailers' point of view. One must admit some doubts as to whether the limit of 3d. will suffice to cover everything. The minimum price of the installation itself is also somewhat low, especially in view of the present high price of labour and of materials. When we add to all this the fact that most competent inventors have their time more than fully occupied at present, one wonders whether it is at all likely that the competition will prove productive.

The re-organisation of the Board of Trade is a development that should be of great importance and benefit to British industry. For a long time past the motor industry, amongst others, has been calling for the creation of a Department of Commerce and Industry under a responsible Cabinet Minister. Now it would appear that such a department has actually been brought into existence. It is true it still comes under the control of the Minister who is also responsible for the Administration of Public Service; but the two branches of the Board of Trade are, however, almost entirely separated from one another, and that which deals with industry and commerce is regarded as the senior department. From this it follows that the President of the Board of Trade must accept the responsibility of acting as a Minister of Commerce and Industry, and must be held liable to answer criticisms levelled at him from the House of Commons if these important interests are not properly safeguarded. This broad scheme of re-organisation follows upon the creation of the Overseas Trade Department, which links the Board of Trade with the Foreign Office; and altogether it would appear that we now have in existence machinery which certainly should be capable of insuring that the proper claims of industry are no longer neglected or belittled. The recently-formed committee of members of the House of Commons interested in commerce and industry will be of great assistance in advising and encouraging the new department.

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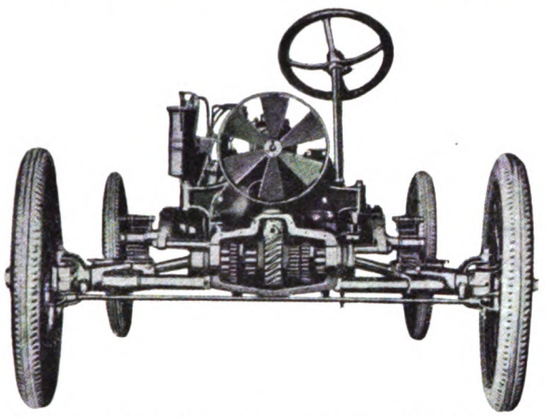
MOTOR TRAFFIC.

A FRONT-WHEEL DRIVE CHASSIS.

The accompanying illustrations show the method of front-wheel drive which distinguishes a ¾-ton chassis made by the Camden Motors Corporation, of Camden, New Jersey. This unusual design is combined with a frame of somewhat curious appearance. The power transmission mechanism and control form, as will be seen, a unit under the head at the front of the chassis.

With the "frontmobile" design it is possible to employ a frame dropped several inches at the rear of the engine, thus enabling the centre of gravity of the load to be lower than where the rear drive



Position of the Drive in the Frontmobile Chassis.

is used. Another feature of the design is the absence of the usual long levers. These are rendered unnecessary as the service brake is worked by a pedal, and the gear change is controlled by a short lever at the steering post. The gear itself is of special design of the selective sliding type, and forms a unit with the motor which is placed in front of it.

The engine is a 22-H.P. four-cylinder Golden, Belknap and Swartz, of 3¾-in. bore by 4¼-in. stroke. The thermo-syphon water-cooling system and a vertical tube radiator are used. The carburetter is a Zenith, and is fed by vacuum from the fuel tank at the rear. The starting, lighting, and ignition system is two-unit, comprising a Dyneto generator and a Willard storage battery. The clutch is a multiple disc running in oil, faced with asbestos.

The final front drive, which is the outstanding feature of the chassis and the reason for the other departures from conventional design in the vehicle, is by a top-mounted worm direct to the live axle. The axle is a floating type. Both the driving thrust and torque are taken through the front springs. All of the springs are half-elliptic.

The service brake is an external contracting type, applied to the rear wheels and controlled by a pedal. The emergency brake is also pedal-controlled, and is an internal expanding type, also on the rear wheels.

The frame is of pressed steel, drop forged construction. The wheels are wooden with oval spokes, and carry 32 by 3½ in. pneumatic tires, both front and rear. The lubricating system is splash and pump in combination.

Although the ¾-ton model is the only Frontmobile delivery car chassis made at present, it is the intention of the company to add a 1-ton chassis to its line.

GAS TRACTION.

No Further Permits Except for Certain Public Utility Services.

It was announced on March 23 that the shortage of coal supplies and transport and the necessity for further economies in the consumption of coal gas have compelled the Board of Trade to reconsider the position with regard to the use of gas substitutes for petrol in motor vehicles. While it is not proposed to withdraw permits which have been issued, no further gas permits can be granted except for public utility services operating north of the southern boundary of Durham and Westmorland.

L.C.C. Vehicles Fitted with Containers.

In view of the shortage of petrol a number of the motor vehicles employed by the London County Council Tramways department have been adapted to run on coal gas.

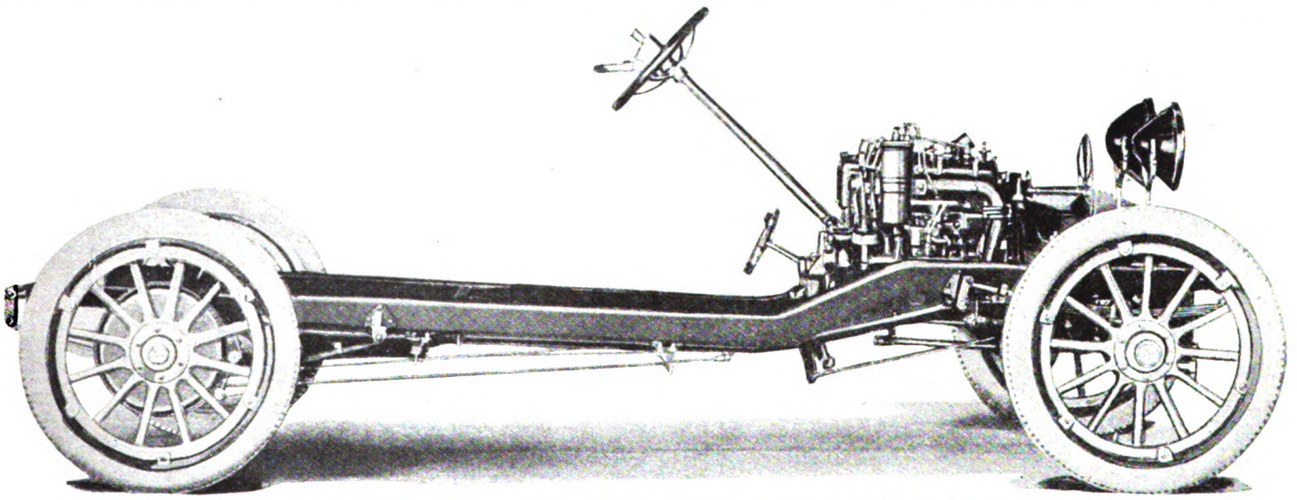
The Council is also making arrangements for gas to be substituted for petrol as the driving power on certain motor lorries. For this purpose two gas storage cylinders have been purchased from the Murphy Submarine Pipe Line and Flexible Tube Company, Limited, for £15 each, less 20 per cent.

Gas Tramway Cars.

Morecambe Corporation have adopted gas for driving their petrol electric cars between Morecambe and Heysham.

THE AUSTIN HANDBOOK.

From the Austin Motor Company we have received a copy of "The Austin Handbook," a useful little book of instructions for the lubrication and adjustment of the Austin 2-3 ton chassis. The information is given in the clearest and most practical way that one can possibly conceive. The practical note strikes one, in fact, from the first, because the booklet is bound in a fashion which, whilst attractive as regards appearance, is suited to hard wear and constant use, with a waterproof clasp cover that makes the book easy to carry and keeps its pages well protected in all conditions. So far as the letterpress is concerned, it says what there is to be said in the plainest possible English, and it backs that up by some scores of illustrations that must assuredly leave not the smallest point of doubt as to what to do in any of the many and varied little exigencies that arise in the running of a vehicle. Altogether it is an excellent example of what such publications should be, just as in the Austin chassis one finds all the essentials of a thoroughly serviceable commercial vehicle.



Side View of Frontmobile Chassis, Showing Gearchange Lever on the Steering Post and Absence of Handbrake.

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MOTOR TRAFFIC.

CINEMA MOTOR LORRIES FOR PROPAGANDA WORK.

A new departure for the Government to take is the sending out of motor lorries to all parts of the country for the purpose of spreading knowledge of the war and some of its actualities among the people of the villages and smaller towns. Each vehicle is practically a travelling cinematograph theatre; and its design and construction

The Motor-Cinema Theatre en Route.

are a striking example of what can be accomplished by the combination of intelligent imagination and engineering skill. It is surprising that it should have been left to a Government department to discover the possibilities of a union of two of the most popular modern engineering developments.

Ten of the vehicles of the type shown in the accompanying illustrations were recently completed. On April 2 they were inspected on the Victoria Embankment by Lord Beaverbrook, the Minister of Information; and on the following day they began their itinerary, each vehicle setting out in accordance with a detailed schedule, carefully prepared to enable it to accomplish the utmost work with the least waste of time.

The vehicles and equipment have been built to the design and specification of Captain J. W. Barber, of the Ministry of Munitions, who was the originator of the scheme and has been responsible for the organisation of the work. Before receiving his commission Captain Barber, as a consulting electrical engineer, had advised various cinematograph companies, and he quickly grasped the possibilities of the motor vehicle and cinema for propaganda purposes. The combination was, however, so novel a scheme that a multitude of details had to be worked out, and it is a notable piece of war work that ten machines have been completed so quickly.

Inspection of the accompanying illustrations and the following description shows that each equipment is fully complete and embraces everything necessary for picture projection. It is self-contained and portable in character, whilst each outfit is accompanied by a capable man able to effect any repairs that may be necessary on the tour. Each vehicle comprises a complete cinematograph outfit mounted on a specially designed motor lorry. The latter is a 4-ton Vinot chassis equipped with 4-cylinder 40-H.P. engine, 4-speed gear box, and worm drive back axle.

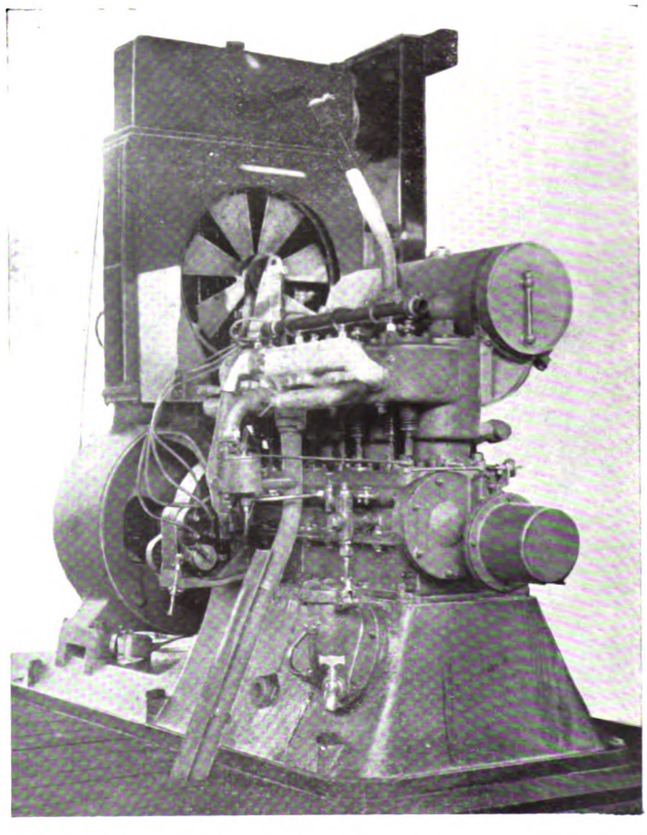
The body is one specially constructed for the purpose, being extra large with a fixed roof, and the sides hinged, so that the bottom part can act as a platform, and the top part has an extended canopy. The sides are fitted with three legs which rest on the ground, whilst the top part is held up by compasses. The back of the body is built on similar lines; consequently the top can be entirely closed or open, with the exception of the back of the driver's canopy, which is made of strong boards to carry the switch boards and all the necessary control for the cinema. The body is so constructed as to be used in all kinds of weather; it can be either totally open, totally closed, partially open or partially closed, either while running on the road or at a standstill. The bodies are of roomy construction, and can act as the homes for the various parties, hammocks being provided for sleeping purposes.

The chassis is fitted with special transverse bearers to take the weight and vibration of the self-contained generating plant which forms part of the equipment. The plant for the generation of electric light consists of a 4-cylinder Pelapone engine of 12 H.P., running at 800 revolutions per minute, which was built with extreme care to secure the perfect balance of all the moving parts in order to reduce vibration to a minimum. The engine is fitted with governor throttle and automatic lubrication, the carburetter being so designed as to be run with slight alteration, on either paraffin or petrol fuel. Cooling is by a special radiator mounted between the engine and dynamo, effective cooling being maintained by the employment of a high speed fan driven by a substantial Whittle belt. Ignition is by high-tension magneto. This engine conforms as closely as possible to standard motor car practice, so as to be readily understood by the motor driver, who is able to effect any necessary running repairs. The dynamo, which is mounted on a base plate common with that of the engine, being directly coupled thereto, is of the General Electric Company's manufacture. The machine is compound wound and has an output of 100 amperes at 70 volts, capable of withstanding an overload of 25 per cent. for continuous running of two hours without overheating or sparking.

The electric control panel is a very substantial construction complete with all instruments and cut-outs. A minor detail, but one which is nevertheless of great importance, bearing in mind the nature of the work to be undertaken, is that all the cut-outs are fitted with straps to prevent any possible chance of falling out owing to the motor car vibration or road jars.

The projectors are latest model Kamm machines with new pattern front type drum shutter. They are packed away in specially constructed mahogany cases, sub-divided to accommodate the various component parts. Each projector outfit is complete with three projection lenses of different foci, and two lantern lenses. Two hundred feet of cable is carried with every outfit, so that in the event of a suitable hall or tent being found for cinematograph display, the current can be run from the generating outfit to the body of the hall.

All the equipments are standardised in every way, and the most complete stock of spares for both lorries, generating plants, and projectors accompany the expedition. Each unit is replete with



Petrol-Electric Generator Supplying Current to Lantern.

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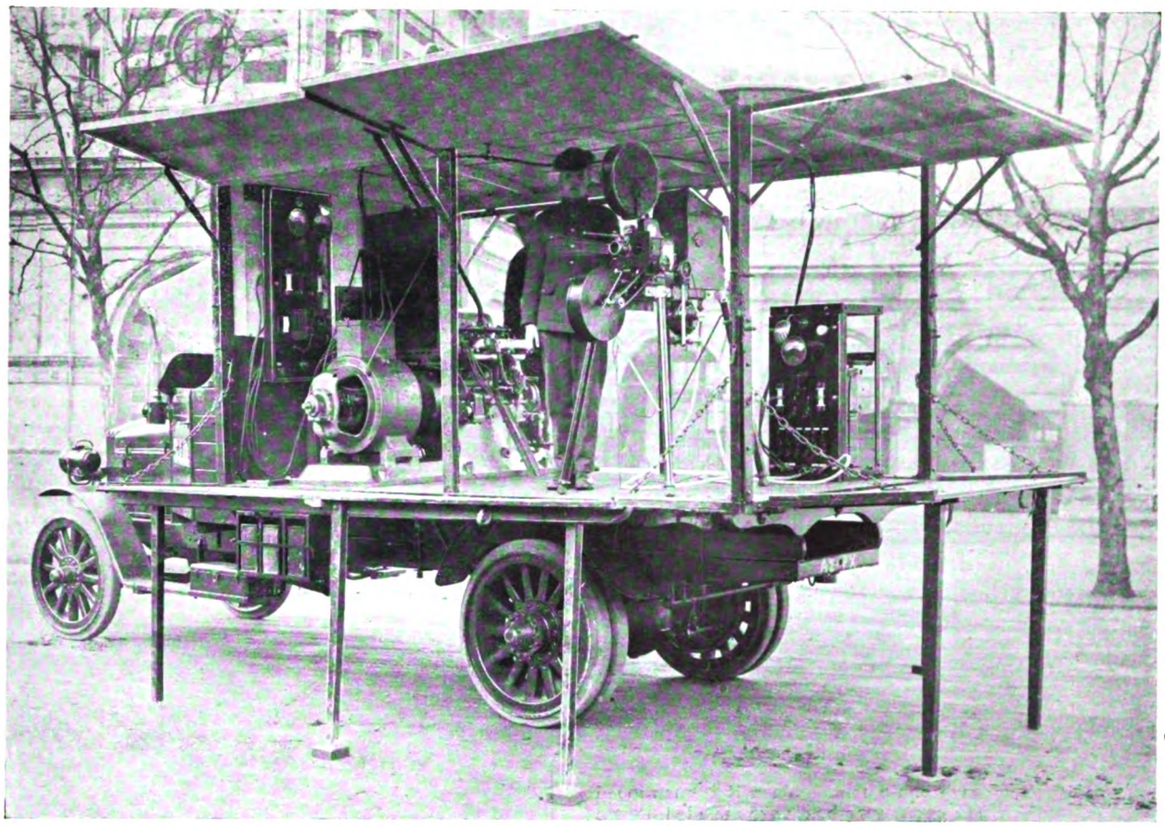
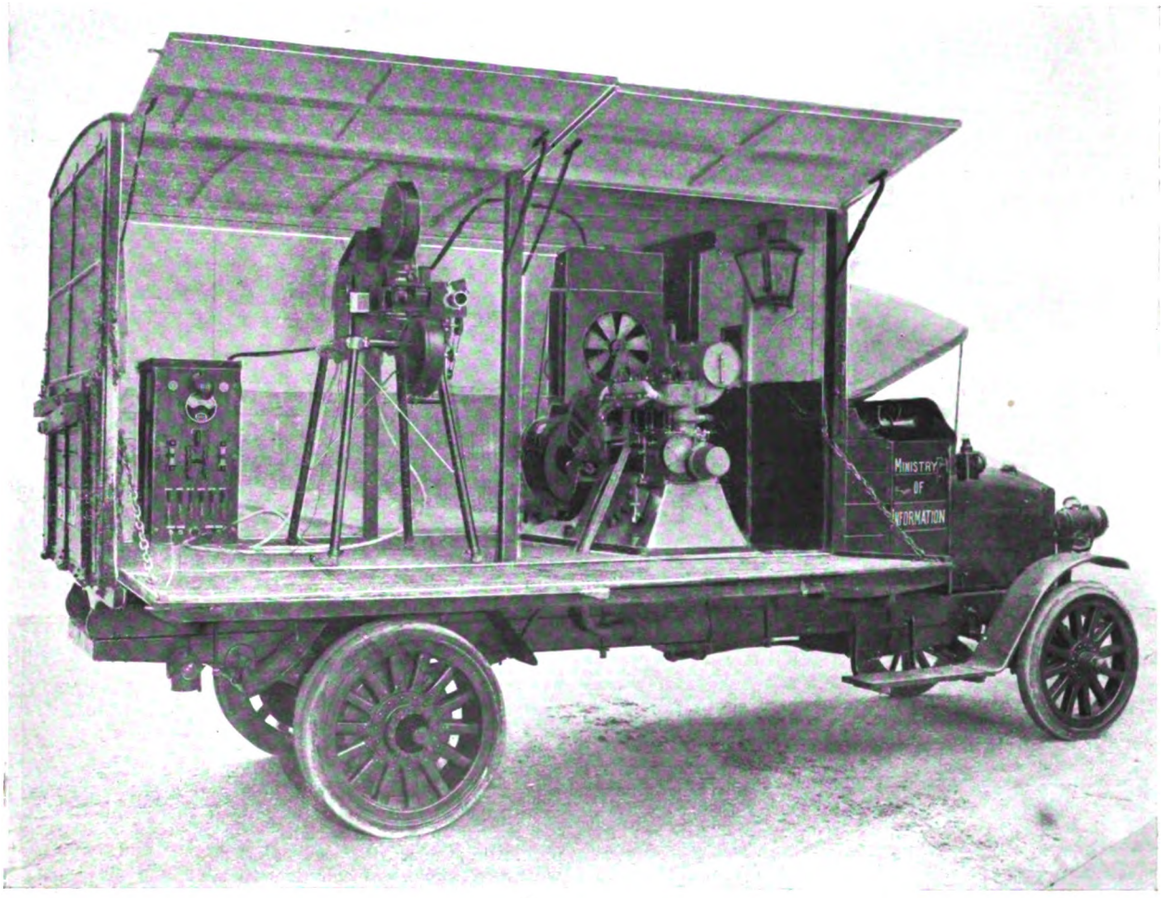


A Projector in Operation, with Sides and Back Open to form Spacious Operator's Box.
(Photograph taken with one-half minute exposure with engine running at 800 r.p.m.)



Interior of Motor-Cinema, Showing Complete Equipment.

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MOTOR TRAFFIC.

all spare parts likely to be required for minor breakdowns; and to facilitate rapid repair, a folding workshop bench, heavy vice, melting pot, soldering irons, and tools capable of performing all

Workshop Equipment Everything Needed for Roadside Repairs.

field work, form part of each equipment. When it is mentioned that spare back axles, crank cases, gear boxes are included, it will be seen how complete and self-supporting is the expedition.

When a display is to be given, a screen is set up at a distance of 100 ft. or more from the projector. One of the films shows how Britain has beaten Germany at Zeppelin building. Others show British bomb-dropping squadrons in flight formation, "tanks" in action, and the after-care of soldiers, and there are also war cartoons.

ROAD TRANSPORT BOARD.

Formation of Central and Local Advisory Committees.

The President of the Board of Trade has wisely paid attention to the dissatisfaction generally expressed with the constitution of the Road Transport Board, which he recently appointed for the co-ordination of road transport facilities throughout the country. With the approval of the Transport Board, Sir Albert Stanley has appointed a Central Advisory Committee for the purpose of considering and advising upon the proposals that will emanate from the Board. In the provinces local advisory committees are being formed to act in a similar manner for the 13 Divisional Boards. Another task devolving upon the Central Advisory Board will be to act as a link between the Divisional Boards and the Road Transport Board. The members of the Central Advisory Committee are as follows:

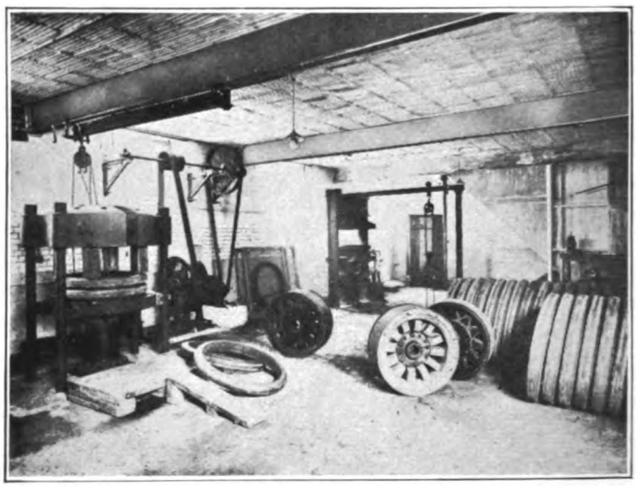
Chairman—Major Nigel Walker (of Messrs. Pickford's, Limited).
John Allen, Esq., O.B.E. (of the Oxford Steam Plough Company, Limited).
Walter Wolsey, Esq., Jun. (representing the Commercial Motor Users' Association).
F. G. Bristow, Esq., F.C.I.S. (representing the Commercial Motor Users' Association).
G. A. Dutfield, Esq. (chairman, National Federation of Commercial Road Transport Associations).
N. F. Wentworth, Esq. (of Hayes Wharf Cartage Company, Ltd.)
F. H. Griffith, Esq. (representing London distributing firms).
A representative of the Association of Chambers of Commerce.

Spencer Moulton "Super-mileage Tires."—Solid rubber tire users in the West of England, also in Wales, and some of the adjoining counties, will be pleased to note that arrangements have been made for prompt attention to their requirements by Geo. Spencer, Moulton and Company (head office, Solid Tire Department, 239, Deansgate, Manchester), who have arranged that Messrs. Haslem and Stretton, Limited, of 11, Windsor Place, Cardiff, and Bristol Bridge, Bristol, shall have the sole agency for their "super-mileage" tires in the counties of Glamorganshire, Monmouthshire, Hereford, Gloucestershire, Dorsetshire, Somersetshire, Devon, and Cornwall; whilst Messrs. Tom Norton and Company, Limited, of Llandrindod Wells, have taken up the sole agency for the whole of Wales with the exception of Glamorganshire.

THE MIDLAND RUBBER COMPANY'S NEW LONDON DEPOT.

As a consequence of the development of their London business, the Midland Rubber Company, Limited, whose headquarters are at Ryland Street, Birmingham, have found it necessary to acquire larger and more convenient premises. At the invitation of the company's London manager, Mr. W. J. A. Houston, a representative of The Tramway and Railway World recently had an opportunity of inspecting the new depot, the equipment of which has now been completed. The arrangements have been carefully thought out, and the Midland Rubber Company's customers in and adjacent to London will appreciate the excellent facilities which are now available for their service.

The new premises are situated at Causton Street, Westminster, at the river end of Vauxhall Bridge Road, and consist of a large covered and well-lighted garage where a considerable number of vehicles can be accommodated at the same time; large solid tire store, where a comprehensive stock of all the usual sizes of the "Midland" well-known band tires is maintained; and a well-equipped works, with the necessary tire presses installed for dealing



with the largest tires manufactured by the company. These departments are all situated on the ground floor, and are remarkably easy of access. On the upper floor, over the solid tire store, a well-arranged store and showroom fitted with racks and bins under Mr. Houston's personal supervision, afford ample accommodation for the storage and display of a large stock of pneumatic tires of various types and sizes, and also the numerous rubber fitments for which the Midland Company are noted. A complete range of well-appointed offices are also situated on the upper floor over the press shop.

The illustration gives some idea of the accommodation now available at this depot, and in the course of a conversation with Mr. Houston we were assured that he fully realised the importance of prompt service during the present shortage of transport vehicles, and was prepared to do his utmost to ensure the quick despatch of all replacement orders with which he was favoured. The Midland Rubber Company have been fortunate in securing premises so well suited for their business, and as the area is of considerable proportions they will be well equipped for the rapid development of the industrial motor industry which will begin just so soon as we light upon happier times.

The Shrewsbury S.T. and Challiner Tire Company, Limited, have re-opened their Leeds office at Crown Chambers, Albion Street (telephone No. 5284 Central; telegraphic address, "Challiner, Leeds"). Arrangements have been made for carrying suitable stocks of solid tires, and special arrangements with the firm of Mr. R. Hutchinson, Wellington Bridge, ensure the prompt fitting of renewal tires, with ample accommodation for vehicles.

Compressed Gas for Omnibuses.—The Home Office and the Petroleum Executive have informed the Omnibus Committee of Eastbourne Corporation that at present there are no regulations prohibiting the use of cylinders for compressed gas. The committee have therefore fitted cylinders to a number of vehicles. Bolton Gas Committee have deferred consideration of a request by the Food Control Committee that the committee should instal a gas compressor plant at the gasworks.

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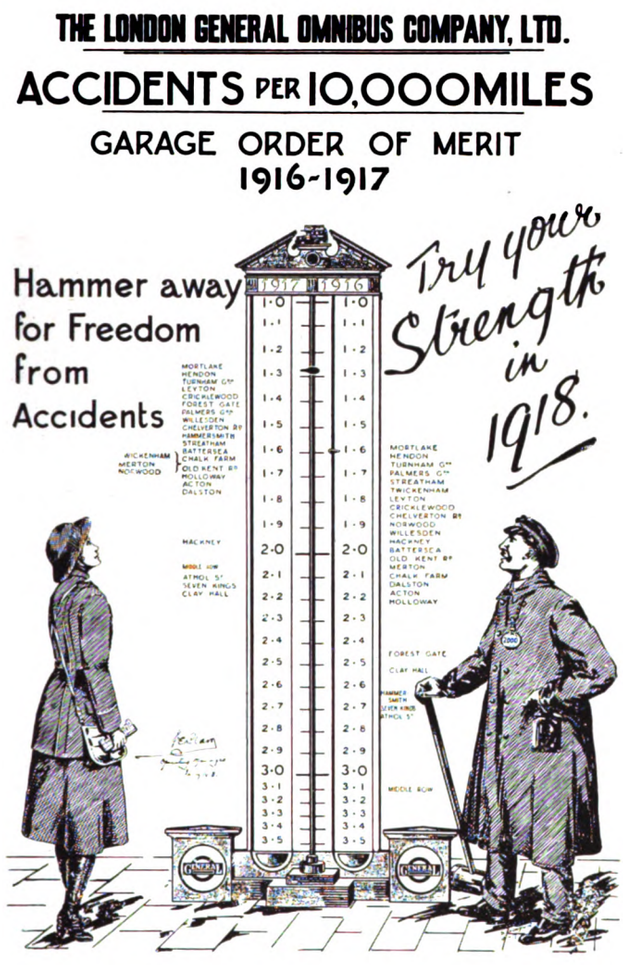
MOTOR TRAFFIC.

L.G.O. ORDER OF MERIT.

GARAGE RIVALRY FOR FREEDOM FROM ACCIDENTS.

In previous years we have reported the results of the yearly competition between the garages of the London General Omnibus Company for freedom from accidents. Thanks to the courtesy of the publicity bureau of the London Underground Railways and General Omnibus Company, the cartoon which is annually exhibited in the garages has also found a place in our pages. The display of these drawings in the garages, combined with the judicious incentive on the part of the garage foremen, has considerable effect in stimulating rivalry among the drivers, conductors, and fitters. Upon the vigilance of this trio of workers the company are dependent for the continuance of the remarkable diminution that has taken place in the number of accidents during the past three years.



The cartoon for the current year is here reproduced. Besides indicating that the lead for freedom from accidents has been taken by the Mortlake garage, it has an historic interest in that a woman conductor is shown for the first time. This incident is a reminder that the company, despite the high wages paid, are now experiencing difficulty in recruiting a sufficient number of drivers and conductors to maintain the services. As an instance it may be mentioned that men are accepted for training as drivers up to the age of 45 years. The girls, who for over two years have constituted the majority of the conductors, perform their tiring work in a satisfactory way, but patriotic calls to the ranks of the women's auxiliary to the navy, army, and to the hospitals and agriculture, have had the effect of causing numerous vacancies and restricting the supply. It is of the greatest importance that the company should be enabled to secure a sufficient number of employees, for on many of the routes traversed by the omnibuses there are no alternative travelling facilities.

A trophy is awarded to the garage that heads the freedom from accident competition.

ELECTRIC VEHICLE COMMITTEE.

IMPORTATION OF BATTERY PLATES.

Although it is some time since a report was issued dealing with the work of the Electric Vehicle Committee, it must not be inferred that the committee has ceased its activities. From the beginning of July, 1917, up to date, there have been five meetings of the committee, including sub-committees. The committee's efforts have been mainly directed to negotiations with Government departments with a view to facilitating the extended use of commercial electric vehicles by an increase in home construction and a modification of import restrictions. The committee's efforts have not been unfruitful, but it is hoped that some further concessions may be obtained in the future, having in view the beneficial effect that the extended use of electrics would have in the matter of conserving grain and petrol supplies. It may be mentioned that the maintenance of all electric vehicles in service for utility and national work is strongly supported by H.M. Petroleum Executive on grounds of petrol economy.

The committee has been in close consultation with the Ministry of Munitions as to fuel economy and upon the question of the allocation of lead for lead-plate batteries. In view of the great demand for lead for war purposes, the committee has obtained a promise from the Munitions Overseas Transport Department to allot shipping space up to a total of six tons per week for the import from the United States of America of lead battery plates for electric vehicles. It was at first proposed that battery plates should be brought over and allocated through a firm of accountants acting on behalf of the Electric Vehicle Committee, but a consideration of the question by a special sub-committee led to a decision that it would be preferable to let the battery and vehicle makers apply with the support of the committee, within the approved weekly limit of weight, to the respective Government departments concerned in import and shipping questions in respect of any batteries that may be required.

In July the committee was requested by the Mechanical Transport Department of the Ministry of Munitions to co-operate in a scheme proposed by the Director of Mechanical Transport, for getting more electric vehicles put into service with a view to saving petrol, and a concomitant to this scheme was a proposal to provide facilities for the building of electric vehicles in quantities by certain British firms, and the import of vehicles from the U.S.A. The committee met in conference with the Director at the Ministry and discussed his proposals in detail. At the request of the department, and in connection with the scheme, the committee collected information from local authorities as to motor vehicles in use and those on order, and generally went to a great deal of trouble in the matter. Owing, it is understood, to the stringency of the steel position for war purposes, the contemplated scheme did not admit of adoption.

The committee has from the first hoped for the harmonious co-operation of motor traders and electric supply authorities in promoting and facilitating the adoption and use of the electric vehicle. In some quarters there have been signs of opposition on the part of the motor traders to electric supply authorities taking up the care and charging of electric vehicles, but this is proved to be due to a misunderstanding of the position which, now that the motor manufacturers and motor traders are represented on the committee, it is hoped to remove, with resulting harmonious co-operation between all interests. To this end a joint meeting is being arranged of the Council of the Motor Trade Association and the Electric Vehicle Committee.

The committee's aim has been to make its constitution as completely representative as possible of all interests concerned, and in accordance therewith the following members have been added :—

Mr. Goodwin (managing director of C. A. Vandervell and Company, Limited), as representative of the Motor Trade Association.

Mr. H. Wyatt, as representing the British Motor and Allied Manufacturers' Association.

Mr. J. P. Kemp, as representative of Agents for Electric Vehicles.

Mr. P. Still, who has been a member of the committee from its early days, as representative of the Chelsea Electricity Supply Company, now becomes by the consent of 9 out of 13 companies the representative of the London Electricity Supply Companies on the committee.

JOHN I. THORNYCROFT AND COMPANY, LIMITED.—The calendar sent out by this firm for 1918 is of the usual tear-off type, showing the full month at a glance. The design of the illustration, however, is quite original, and depicts examples of both the marine and road machines for which the firm have become famous. The marine section of their business is represented by a fleet of destroyers at full speed and the road vehicle section by a Thornycroft lorry upon which is mounted an anti-aircraft gun in action.

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MOTOR TRAFFIC.

EDISON VEHICLES AT PONTYPRIDD.

Mr. W. E. Lowe, surveyor to Pontypridd Urban Council, has presented the following report on the results of six months' working of two Edison 2-ton electric vehicles, used in the collection of scavenging and in general haulage. A third vehicle has since been put into service, and a fourth is on order.

Two vehicles (at £1,020 each)—£2,040.

Electricity, 2·80 units per mile.

Charge for current, 1½d. per unit.

Tires guaranteed for 10,000 miles. Renewals provided for by an allowance of 1d. per mile.

Annual Vehicle Costs.

	£
Interest and loan repayment, 10 years at 6 per cent. ...	280
Insurance	15
Repairs, renewals, and maintenance	100
Cleaning	15
	£410

Working Cost, June 23 to December 22, 1917 (inclusive).

Material carried, refuse collected and carried, 4,730 tons.

	£	s.	d.
Wages (including war bonus and overtime) ...	388	14	10
Vehicle costs	205	0	0
Electricity (21,695 units at 1½d.	135	11	10
Tires (7744·7 miles at 1d.)	32	5	5
	£761	12	1

Cost per ton, 3s. 2·69d.

Horse haulage, 4s. 6d. to 5s. per ton.

Average, 4s. 9d. per ton.

4,730 tons carried during this period at 1s. 6d. per ton less than by horse haulage represents a saving of £354. The electrical department also derives the benefit of an additional revenue of £135 for units supplied to the vehicles.

MOTOR VEHICLES FOR MUNICIPALITIES.

Spenborough Urban District Council has decided to purchase a motor fire engine.

Oakham Rural District Council intends shortly to purchase a steam motor wagon.

Uxbridge Urban District Council has under consideration the purchase of a motor fire engine.

Warrington Corporation has under consideration a proposal to purchase an additional motor fire engine.

Metropolitan Water Board has decided to purchase two steam motor wagons fitted with end tipping bodies.

Sheffield Corporation has purchased another steam motor wagon for use in the Public Health department.

Bolton Corporation has decided to purchase an electric battery wagon for use in the street cleansing department.

Gravesend Town Council has approved of the Highway Committee's recommendation to purchase a steam tractor.

Newton Abbot Rural District Council has agreed to purchase a steam tractor for use in the Highways Department.

Norfolk County Council has purchased a 5-ton steam tractor and two tipping wagons for use in the highways department.

Poplar Borough Council has under consideration the purchase of a further motor wagon for use in the electricity department.

Deptford Borough Council has accepted the tender of the Austin Motor Company, Limited, for the supply of a 3-ton chassis.

Marylebone Borough Council has decided to purchase a small motor car for use in the Cleansing Superintendent's department.

Walsall Corporation has under consideration a proposal to purchase a steam motor wagon and trailer at an estimated cost of £1,000.

Maidenhead Town Council has decided to make application to the Local Government Board for sanction to purchase a motor fire engine.

Ilford Urban District Council has under consideration a recommendation from the Works Committee for the purchase of two electric lorries.

Barnstaple Urban District Council has decided to invite tenders for the supply of a steam tractor and two trailers for use in the highways department.

Padiham Urban District Council has applied to the Local Government Board for sanction to purchase a motor tipping wagon at an estimated cost of £1,000.

Edinburgh Corporation has agreed to the appointment of a committee to consider the advisability of adopting electrical battery traction in the street cleansing department.

Electromobile (Leeds), Ltd., Neville Street, Leeds, are supplying two 3½-ton tipping wagons to Bootle Corporation, and one 2-ton chassis for Oldham Corporation, to be fitted with an omnibus body.

Poplar Borough Council propose to buy an additional Foden steam wagon for the electricity undertaking. The Electricity Committee report that the present cost of a Foden wagon suitable for the work would be £1,000.

Southend-on-Sea Town Council has accepted the tender of Ransome, Sims and Jeffries, Limited, of Ipswich, for the supply of two electrically operated tipping wagons for use in the street cleansing department at a cost of £2,067.

Margate Corporation has recently taken delivery of a new motor fire engine. The machine is one of the well-known "Hatfield" type, supplied by Messrs. Merryweather and Sons, of Greenwich, and is of 60 H.P., with a maximum road speed of 35 miles per hour on the level. The capacity of the fire pump is 400 gallons per minute. It is fitted with a 60-ft. fire escape, which is so arranged that it can also be used as a water tower. The machine has Dunlop tires.

MOTOR TRAFFIC NOTES.

Fodens, Limited, Sandbach, Cheshire, have received an order from the Birmingham and Midland Transport Company for six of their standard 5-ton steam wagons.

Taxicabs in Paris.—The Paris taxicab is regarded as a necessary vehicle, and as such is still permitted to run. The supply of petrol per cab is cut down to 1¾ gallons per day.

Chester Corporation has made arrangements whereby steam wagons running on the main route between Manchester and Liverpool can obtain a ready supply of water at a uniform charge of 4d.

War-Worn Vehicles.—Speaking in London recently, Dr. Addison, Minister of Reconstruction, stated that "Arrangements had been made to have all war stores overlooked before they were handed over to other people for them to make money out of."

Traction Engines for Agricultural Purposes.—It is officially announced that, owing to the limited supply of steam tractors, farmers, contractors, and others wishing to buy these machines must first obtain permission from the Director, Agricultural Machinery Department, 8, Northumberland Avenue, London, W.C.2.

Oil Fuel Supplies.—As a result of extensive tests recently carried out by the authority of the Ministry of Munitions, it has been shown that very high yields of oil fuel can be obtained by the carbonisation of cannel coal, as well as valuable by-products at comparatively small cost. Existing gas plants, with certain modifications, can be utilised for this work.

Thornycroft New Repair Depot.—To enable owners of Thornycroft motor vehicles in Lancashire and Cheshire to enjoy the advantage of having their repairs promptly attended to by skilled workmen familiar with the design and mechanism of the machines, Messrs. Thornycroft have now established a repair depot in Great Bridge Street, Manchester. A similar depot, to meet the requirements of the Yorkshire users of Thornycroft vehicles has been established at 35, Kirkstall Road, Leeds.

Anti-Freezing Device for Motor Vehicles.—An improved radiator for motor vehicles has recently been patented by Mr. W. Bonsin, of the Motor Transport Service, the object being to prevent the water from freezing when the vehicle is left standing. The improvement takes the form of adding a gas-heating arrangement in the base of the radiator on the principle used in ordinary gas stoves to be coupled up by a flexible tube to a supply carried on the machine specially for that purpose, unless the vehicle is running on gas.

Denbighshire Motor Omnibus Service.—Apparently with the full approval of the military authorities, a motor omnibus service has recently been established between Abergele and Pensarn and a military camp. As the consent of the Denbighshire County Council had not previously been obtained, action has been taken by the Council in the police-court, it being alleged that the new service constitutes an infringement of the Local Government (Emergency Powers) Act. The Council claim payment at the rate of 4d. per mile run for road maintenance, against which the company offer ½d. per mile. An endeavour is being made to settle the matter amicably, the case being adjourned for that purpose.

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THE

Tramway & Railway World

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

COUNTY BOROUGH OF SUNDERLAND.

The Corporation are prepared to receive tenders for the supply and erection at their Electricity Works of one Forced Draught Cooling Tower. The work to embody the use of such timber as can be worked in from two cooling towers at present occupying the site of the new one.

Specification and Form of Tender may be had upon application to the General Manager, Mr. Alfred S. Blackman, Electricity Offices, Dunning Street, Sunderland, upon payment of a deposit of £1, which will be returned only after a bona fide tender has been opened.

Tenders, endorsed "Cooling Tower," and addressed to the undersigned, at the Town Hall, Sunderland, to be delivered not later than first post on Wednesday, April 24th instant. The Corporation do not bind themselves to accept the lowest or any tender.

H. CRAVEN,
Town Clerk.

Town Hall, Sunderland.
April 3, 1918.

PLYMOUTH CORPORATION.

The Plymouth Corporation are prepared to receive Tenders for the Supply of:—

(a) Turbo-Alternator.
(b) Converter.
(c) Transformers.
(d) Switchgear.

Specifications and Forms of Tender may be obtained from the undersigned. Applicants must state the Sections required, and make a deposit of £1, which will be returned after receipt of a *bona-fide* Tender. Tenders to be delivered by April 29, 1918.

Prince Rock, Plymouth.
April 10, 1918.

E. G. OKELL,
Borough Electrical Engineer.

DUBLIN CORPORATION.

Electricity Supply.

The Electricity Supply Committee of the Corporation of Dublin desire to receive tenders for the supply and installation at their Pigeon House Generating Station of Water-tube Boilers, Economisers, Pumps, Pipe-work, etc., also Boiler Seatings and Flue-work.

As the entire plant must be completed for beneficial use at the earliest possible date, it is necessary that intending tenderers should at once inspect the site in order that they may be fully informed of the conditions to be complied with as to space and local requirements, and no tender will be considered which is not based upon such inspection.

General Conditions, Specification, and Form of Tender may be obtained from the City Electrical Engineer, Fleet Street, Dublin, on and after Thursday, April 11, 1918, on payment of three guineas, which sum will be refunded on receipt of a bona fide tender.

Tenders, sealed and endorsed "Tender for Boilerhouse Plant," must be addressed to "The Chairman, Electricity Supply Committee, Lord Edward Street, Dublin, and delivered there not later than 12 o clock noon on Tuesday, April 23, 1918.

The Committee do not bind themselves to accept the lowest or any tender.

FRED. J. ALLAN,
Secretary.

Electricity Supply Committee's Offices,
Lord Edward Street, Dublin,
April 5, 1918.

POSITIONS VACANT.

BOROUGH OF DARWEN.

Appointment of Tramways Manager.

The Council invite applications for the position of Tramways Manager, to take entire supervision of their Tramways Undertaking. Salary £250 per annum.

Applications, endorsed "Tramways Manager," stating age, experience, and copies of three recent testimonials, must reach the undersigned not later than the 25th day of April, 1918.

WILLIAM P. HALLIWELL,
Town Clerk.

Town Clerk's Office, Darwen.
10th April, 1918.

FARNWORTH URBAN DISTRICT COUNCIL.

Electricity Department.

Required, Shift Engineer. Wages 60s. per week, including bonus plus 12½ per cent. Apply, stating age, experience in rotaries, motor-generators, battery, and traction supply, to.

Electricity Works,
Albert Road, Farnworth,
Nr. Bolton.

A. J. HUTCHINSON,
Engineer and Manager.

ASSISTANT SHIFT ENGINEER.

Wanted, an assistant Shift Engineer. Applicants must have had a good electrical training and experience in running L.T., three-wire D.C., and three-phase H.T. rotary plant, and preferably with mechnical knowledge. Wages, including bonuses, to commence at £3 10s. per week of 48 hours. Applications, stating age, qualifications, and when able to take up duties, together with copies of recent testimonials, to be sent immediately to the CHIEF ENGINEER, Electricity Works, Lombard Road, Battersea, S.W.11.

W. MARCUS WILKINS,
Town Clerk.

CHARGE ENGINEER.

Charge Engineer wanted for combined A.C. and D.C. station.—Apply, stating experience, with copies of testimonials, and salary required, to BOROUGH ELECTRICAL ENGINEER, Electricity Works, Dover.

ELECTRICAL ENGINEER.

Wanted, Electrical Engineer (ineligible) to take charge of Electric Supply and Tramway System, Africa; good permanent position; knowledge of Portuguese desirable.—Apply by letter, W. M. MORDEY, 82, Victoria Street, S.W.1.

ELECTRICIAN.

Electrician required, preference given to one who has had experience with C.A.V. lighting sets and Tilling-Stevens petrol electric equipment. Permanency and good wages paid to first-class man.—Apply, Maidstone and District Motor Services, Ltd., Maidstone.

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(NATURAL, GLAZE, DULL FINISH, OR COLOURED) in twill, straight, or fancy weaves, canvas backed or unbacked, is

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THE
Tramway AND Railway World

Established in 1892 and Published by

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FOR ALL PLACES ABROAD—Thirty Shillings per annum.

SATURDAY, APRIL 13, 1918.

NEW TRAMWAY LEGISLATION

An increase in tramway fares which the recent award of the Committee of Production has rendered inevitable is generally being made by those undertakings throughout the country whose statutory powers permit them to take immediate action. Authorities that require further power are, however, in a more serious position, for it is probable that some time will elapse before Parliamentary sanction will have been obtained for alterations in the statutory maxima. Last week representatives of both municipal and company tramways laid before the President of the Board of Trade facts which left no doubt as to the necessity of fresh legislation. It was shown that many undertakings are working at a loss and that the only way in which a sound position could be restored was by increasing fares. Sir Albert Stanley admitted the strength of the case presented and intimated that he would at the earliest opportunity ask for the appointment of a select committee of the House of Commons to consider the whole question. National exgiencies will probably make it impossible for him to move for the appointment of the committee as early as was intended, but the action will not be unnecessarily delayed. While it was hoped at one time that the matter might have been dealt with under the Defence of the Realm Act, it is no doubt the wiser plan to proceed by means of an Act which will confer upon the Board of Trade power to grant such increases in statutory fares as may be required by the varying local conditions. The public are so largely affected by any increase in tramway fares and so little acquainted with the conditions of the tramway industry that there will inevitably be considerable opposition to the measure, and it is therefore advisable that the full subject should be fully and publicly considered. Representatives of tramway authorities will be able to place their cases so convincingly before the select committee that the investigation and consequent report should not require much time. A short Act recommended by the Committee would then no doubt obtain the assent of the House of Commons without serious delay. It is a proof of the economy with which tramways in this country have been worked that it has been possible to continue in so many cases pre-war fares up to the present time in spite of the increases in wages, and the cost of material; but it cannot be expected with the last addition to the cost of labour that the undertakings should continue to carry passengers at pre-war rates. Not only have the current working costs to be considered, but it must not be forgotten that great arrears of maintenance are accumulating and the undertakings should be put into such a position that provision can be made for the heavy expenditure which will have to be met as soon as something like normal conditions return. Both permanent way and rolling stock are deteriorating at an alarming rate and repairs will have to be made at greatly enhanced cost as compared with pre-war days. There is a disposition, particularly among local authorities, to regard the evil as sufficient for the day; but it is in the true interest of the ratepayers that their undertakings should be placed in a position to earn sufficient profit to enable them to build up an ample reserve fund.

INCREASES IN TRAMWAY FARES.

Bournemouth Town Council have adopted a report by the general manager of the tramways, Mr. I. Bulfin, with respect to the revision of fares. Mr. Bulfin pointed out that the additional bonus under the award of the Committee on Production entailed an addition to the wages bill of some £7,000 per annum, and taking into account the bonuses already granted there is an increase in the wages bill of £15,000 over pre-war rates. Allowances to dependants would amount to £4,000 and the increased cost for fuel and materials to not less than £8,000; there would thus be a total increase in working expenses of £28,000. The present receipts from the tramways were abnormal, and were not likely to be maintained at normal times. It was necessary, therefore, to balance the expenditure by an increase in fares. Application had been made to the Board of Trade to amend the statutory powers to enable them to increase fares by 50 per cent. above the present maximum; but he did not think it would be necessary for them to avail themselves of the statutory increase. They had gone very carefully through the whole of the fares and arranged them so that practically in every case the fare of one penny would cover a distance of approximately one mile. All halfpenny fares would be abolished, and the penny return fares would be withdrawn. The workmen's penny tickets would cover two penny stages. The amended fares were in accordance with their present statutory powers, but in the case of Poole it would be necessary to obtain the sanction of that Corporation. If the suggested alterations did not produce the necessary increase in revenue, they would have to make use of the new statutory powers about to be granted.

Oldham Tramways Committee have agreed to a revision of fares to meet the increased expenditure. The present charge of ½d. for portions of double stages is to be discontinued, the 1½d. and 2½d. tickets to be 2d. and 3d. respectively; workmen's return tickets are to be increased by 1d. each; and ½d. fares for children are to be abolished, but children will be allowed to travel two stages for one penny.

Derby Town Council have adopted the recommendation of the Tramway Committee for an increase in fares. The 1½d. fares are raised to 2d., and the 2½d. fares to 3d., while transfer tickets are abolished. The increase in wages paid amounts to £5,500 a year, compared with the pre-war rates. The cost of material also has largely increased while the cost for energy is 20 per cent. higher.

Northampton Tramways Committee have decided to make an application to the Board of Trade for power to revise fares. The change is needed in order to avoid a deficiency on the undertaking owing to the large increase in wages.

As a result of arbitration, women conductors and car cleaners at Sheffield have been awarded an increase of 4s. a week, making a total war bonus of 15s. 6d. This increase will entail an additional charge on the tramways department of nearly £10,000 per annum.

At a recent meeting of the Dundee Town Council, Mr. G. A. Johnston stated that the financial position of the tramways department had been extremely satisfactory, but owing to the recent award of the Committee on Production the wages bill had gone up £6,000 a year, and as materials would require £4,000 a year more, making a total of £10,000, it would probably be necessary to increase the fares.

Ayr Town Council have decided to abolish the single halfpenny fare and to raise other fares.

The Dundee, Broughty Ferry and District Tramways Company find it necessary to increase fares, and are endeavouring to obtain a change in the agreement with Dundee Corporation with respect to through fares.

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The Nottingham Tramways Committee have decided to revise the scale of fares. Generally the scheme provides for an increase of a halfpenny on each of the lightest fares, and an advance of a penny on the remainder. The 1d. fare is to be abolished, and in future the minimum will be 1½d., while the 1½d. fares which existed a fortnight ago are to be increased to 2d., the 2d. fares to 3d., 2½d. to 3½d., and the 3d. fares to 4d. The whole of the stages in operation before the recent changes are to be restored. Children under 12 will be charged 1d. for the 1½d. and 2d. stages, 1½d. for the 2½d. and 3d. stages and 2d. for the 4d. stages.

At the monthly meeting of the Birmingham City Council on Tuesday, the Tramways Committee submitted recommendations for increases in fares. There will be a curtailment in the length of all penny stages from two miles to one and a half or one and a quarter miles; an increase of one halfpenny in all other stages; the substitution of a minimum fare of 2d. for a minimum of 1d.; the increase of all bus fares by one penny, and the withdrawal of halfpenny children's fares. It is also proposed that return tickets before 8 a.m. shall be: 2½d. stages, 4½d.; and 3d. stages, 5d.

The Committee point out that before revisions can be made it will be necessary to obtain the consent of the Board of Trade except in the case of omnibus fares and children's fares.

Mr. Harrison Barrow, chairman of the Tramways Committee, said that it had been estimated that there would be a surplus sufficient to enable them to place £65,000 to reserve and to give £25,000 to the relief of rates. Since that estimate had been prepared, they had had to grant a considerable increase in wages, which would amount to £15,000, so that there would be only £50,000 or less for the reserve fund, which was in a very unsatisfactory condition. A year ago they carried forward about £108,000, and of this amount £100 000 had been spent in renewing the track, which was becoming unsafe, so that only £8,000 remained. Since fares were advanced last June, the wages bill had increased by £140,000 per annum, and the further 5s. advance at the end of the year with the 12 per cent. increase recently granted made an additional burden of £70,000 a year. With the present fares it was estimated that there would be a deficit of £30,000 without any provision for the reserve fund.

The Committee's proposals were adopted, with an amendment that the Board of Trade be informed that the matter is very urgent and should be considered promptly.

SELECT COMMITTEE ON TRAMWAY FARES.

On Thursday, April 4, Sir Albert Stanley, President of the Board of Trade, received a deputation from tramway undertakings, including representatives of the Municipal Tramways Association and the Tramways and Light Railways Association. The object of the deputation was to impress upon the Board of Trade the necessity of immediate action being taken which will permit an increase in tramway fares. Owing to the large increase in wages since the outbreak of war, and particularly owing to the recent award of the Committee on Production, the position of tramway undertakings has become serious, and many undertakings are now working at a loss. The financial results of a number of undertakings in this position were laid before the President. The case was presented on behalf of the Municipal Tramways Association by Mr. J. B. Hamilton, general manager of Leeds Corporation Tramways, and Mr. Harrison Barrow, chairman of the Birmingham Corporation Tramways Committee, and on behalf of the Tramways and Light Railways Association by Mr. Harry England, general manager of the Yorkshire (West Riding) Electric Tramways Company. In his reply, Sir Albert Stanley said that he recognised the necessity of legislation, and he suggested the appointment of a select committee of the House of Commons to consider the matter. The appointment of such a committee would probably prove the best means of facilitating the carrying out of the suggested legislation with the least delay.

WITHDRAWAL OF EXEMPTIONS FROM MILITARY SERVICE.

On Wednesday an official notice was published stating that the Minister of National Service has made an Order withdrawing exemptions from military service held wholly or partly on occupational grounds by certain men of various ages employed in a large number of occupations who are in medical categories A, B1, and C1, or medical grades 1 and 2, or who have not been medically examined. The scheme is part of the larger one dealt with by the new Military Service Bill under which men up to 50 years of age are liable for military service.

The Order provides that the exemptions of the men concerned are withdrawn as from April 24th next, after which date the men will be called up for military service. The regulations provide that applications for renewal of exemptions withdrawn by the Order (which can be made on authorised personal grounds only) may be lodged within seven days of withdrawal, *i.e.*, in this case by May. A decertified man has no right to apply for renewal of exemption on occupational grounds, nor has his employer any right to make such an application on his behalf. A limited discretion has been given to each Director of National Service in the regions into which Great Britain is divided to suspend the calling up of a decertified man who is employed on Government contracts for urgent war supplies. Applications for this suspension must be made before April 24 on a special form, and suspension will only be granted under exceptional conditions.

Particulars of the large number of trades and occupations affected by the Order, the manner in which applications may be made in respect of men on Government contracts, and the addresses to which such applications should be sent, are set out in the note appended to the Order.

The Order does not affect the calling up of coalminers, port transport workers, or holders of protection certificates under the Schedule of Protected Occupations.

TRAMWAY EMPLOYEES' WAGES.

At West Ham the award has been accepted and the men are now receiving 20s. a week above pre-war wages and the women 12s. The award has added £25,000 per annum to the wages bill. The difference has been met to some extent by the abolition of the halfpenny fares, but the saving in this way amounts only to £500 a week, and it was stated at a recent meeting of the Council that there is at the present time a loss of £750 a week on the undertaking. The Wages Committee of the Council have received a resolution from the Federal Council asking for £1 a week increase over pre-war wages for all employees of the Council, together with a 12½ per cent. bonus, but the Committee recommend that no action be taken in the matter.

York Electricity and Tramways Committee have granted an increase in the wages of their male employees of 20s. a week above pre-war rates, and 4s. to women, in accordance with the award of the Committee on Production to members of the Transport Workers' Federation. Members of the electrical and engineering trades unions receive 12½ per cent. advance under the munitions award. The estimated cost is £1,945 per year to the tramways department and £696 to the electricity department.

Mr. J. B. Baillie, of the Ministry of Labour, held an arbitration in Dublin on Wednesday into the demands of the National Tramway Workers' Federation, the Amalgamated Association of Tramway and Vehicle Workers, and the Dublin Tramwaymen's Union for increased wages. The employees of the Dublin United Tramways Company are asking for an increase of 20s. on pre-war rates, which was recently granted by the Committee on Production to tramway employees in Great Britain.

MISCELLANEOUS NEWS AND NOTES.

Women Drivers at Carlisle.—The Watch Committee have decided to license women as tramway car drivers.

Wigan Town Council has applied to the L.G.B. for sanction for a loan of £65,000 for extensions to the electricity undertaking.

Women Drivers in London.—A number of women are now receiving instruction in the driving of London County Council tramway cars.

The Industrial League will hold a meeting at 5 p.m. on Wednesday, April 17, at the Central Hall, Westminster, to discuss the question of workshop committees.

Tramways Manager for Darwen.—The Borough of Darwen invites applications for the position of tramways manager. Particulars will be found in our advertisement columns.

Tramway Cars for Sale.—As will be seen from our advertisement columns, Sheffield Corporation tramways department wish to dispose of a number of four-wheel, single deck cars.

Week End Voluntary Drivers.—Men are being trained at Ilford as week-end tramway car drivers, with the object of giving the hard-worked regular motormen occasional holidays.

New Station at Belfast.—The Town Council have adopted the recommendation of the Tramways and Electricity Committee for the appointment of a sub-committee to take charge of the establishment and direction of the proposed new electricity station, for which the Local Government Board have been asked to sanction a loan of £310,000.

Midlands Transport Board.—A Transport Board for the Midlands is about to be formed. Seven local transport committees, with centres at Birmingham, Worcester, Wolverhampton, Coventry, Stoke, Shrewsbury, and Hereford will be appointed. *The Daily Chronicle* reports that Mr. R. R. Fairbairn, formerly manager of Worcester tramways, has been appointed Midlands transport officer.

New South Wales Railways and Tramways.—The Railway Commissioners for New South Wales have presented to the State Government their report on the working of the Government railways and tramways for the quarter ended December 31:—The railways revenue was £2,422,751, an increase of £426,416, and the expenditure £1,584,956, an increase of £93,522. The tramways revenue was £518,607, an increase of £17,767, while the expenditure was £421,592, a decrease of £14,617.

H.M. Trade Commissioner (in South Africa).—Mr. W. G. Wickham (H.M. Trade Commissioner in South Africa) is expected to arrive in the United Kingdom within the next few weeks. *The Board of Trade Journal* states that he will devote several weeks to interviewing (by appointment) representatives of those firms who may be able to see him in London at the Offices of the Department of Overseas Trade (Development and Intelligence), and will afterwards visit the principal trade and industrial centres in the United Kingdom. Firms desiring to have an interview with Mr. Wickham are requested to make their application as soon as possible. Applications should be addressed to the Comptroller-General, Department of Overseas Trade (Development and Intelligence), 73, Basinghall Street, E.C.2. The reference number (D.O.T. 2873/18) should be quoted.

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Queue System at Leeds.—Iron barriers are now being erected in the centre of the streets in Boar Lane and Commercial Street for the purpose of regulating passengers on the queue system. It is hoped in this way to avoid the dangerous rushes in boarding the cars.

Edinburgh Tramway Provisional Order.—Edinburgh Corporation has made application to the Secretary for Scotland for a Provisional Order authorising the Corporation to construct new tramways and to reconstruct existing tramways for working by electric or other mechanical power.

Gosport Strike Ended.—After a strike lasting two and a-half days on the question of a war bonus, the drivers and conductors and part of the fitting staff of the Gosport and Fareham Tramways Company resumed work unconditionally, the company having declined to accede to their demands.

Tramway Repairs After the War.—The Chairman of the Nottingham Tramways Committee recently stated that if the war ended at once, at least £150,000 would have to be spent in relaying the permanent way. For two years practically no material for renewals or repairs had been procurable.

Petrol Economy.—The Economy Section of the Petroleum Executive have made another appeal for public co-operation in securing further economy in petrol. The demands of the fighting services are daily becoming greater, and it is imperative that the supply should be conserved as far as possible. The public are invited not to hire motor cars nor to use taxicabs when they can walk or make use of other means of public conveyance.

Mersey Railway Company.—The report, mentioned in our last issue, that the Mersey Railway Company were in negotiation for a site for the erection of one of the large generating stations suggested by the Ministry of Reconstruction Coal Conservation Committee is, we are informed, incorrect. The Company are not contemplating any large capital expenditure at the present time. The firm interested in the matter are the Mersey Power Company of Runcorn.

Easter Holiday Traffics.—The total receipts of the Leeds City tramways for the five days from Good Friday was £9,316, an increase of £886 over the receipts for the corresponding period of the previous year. At that time, however, a heavy fall of snow interfered with the holiday traffic The receipts of the Sheffield Corporation tramways and motor omnibus department for the week ended March 31 amounted to £12,784, or an increase of £2,059 on the figures for the corresponding week last year.

Glasgow Tramway Fares.—The Tramways Committee on Tuesday again discussed the question of tramway fares, and referred to a small sub-committee the whole financial position of the department including the suggested fare changes. Opinions as to the proposed abolition of halfpenny tickets differ. Several of the labour organisations have protested strongly against their withdrawal, but it seems to be almost impossible to meet the present emergency if the halfpenny fares are continued.

Pay As You Enter.—The Convener of the Dundee Tramways Committee recently stated that the explanation of the fact that they had so few accidents was the present method of collecting fares, which had proved a great benefit to the system. Fares were taken from passengers on entering and the conductors were thus able always to remain on the platform to attend to people going off and on. Mr. Peter Fisher, the general manager, said that the system had been in use in Dundee for thirty years.

Motor Trade Reconstruction.—At the request of the Association of British Motor and Allied Manufacturers, Dr. Addison, the Minister of Reconstruction, has nominated Mr. H. C. B. Underdown, chairman and managing director of Commercial Cars, Ltd., to serve on the Engineering Trades New Industries Committee, and has authorised the formation of a branch committee for the motor industry, of which Mr. Underdown will act as chairman. Mr. Underdown is chairman of the commercial vehicle section of the Association of British Motor and Allied Manufacturers.

Wigan Tramways Department.—Wigan Town Council has approved the recommendation of the Tramways Committee for the appointment of a traffic superintendent. Alderman Fletcher, chairman of the Committee, in explaining the proposal, said that no department had made such enormous strides as the tramways during the past two or three years, and they considered the time opportune to strengthen the department and the staff. The traffic superintendent would be given a certain amount of responsibility, but he would be under the manager.

War Savings Scheme at Glasgow.—Mr. James Dalrymple, general manager of Glasgow Corporation tramways, has initiated a novel scheme for promoting the sale of war bonds. There is an attractive prize list, and for every £1 the buyer has a chance of winning a prize. Nearly three thousand investments of £1 each were made on the 8th inst. A box was placed in Bath Street, and a large crowd was attracted by the band performance and cinematograph display given there. The scheme is not confined to Glasgow, and it is hoped to extend its operations throughout Scotland.

An Easy Target.—The Plymouth tramway system, says the *Western Daily Mercury*, is one of the most successful and one of the most abused of local institutions. Since the unification of the local systems and the adoption of uniform fares, its prosperity has become so great that it germinates abuse. The Committee cannot carry all the passengers who want to ride. New cars are on order, but cannot yet be obtained. "If the public would (ever so grudgingly)" adds our contemporary, "admit now and then that the tramways did the best they could with the facilities they possess, no great harm would be done."

Salford Town Council is applying to the L.G.B. for sanction for a loan of £15,000 for the extension of a sub-station and for work in connection with electricity supply from Manchester Corporation.

Settlement of Bradford Difficulties.—Alderman Enoch Priestley, chairman of the Bradford Corporation Tramways Committee, referring, at a meeting of the Town Council, to the recent strike, said that the Committee were most anxious to work in harmony with their employees, and any future causes of unrest or dissatisfaction on the part of the latter could be discussed between their representatives and those of the Committee as they arose. There was no reason why differences could not be settled by the people concerned if they were left alone, but unfortunately the flames of industrial disputes were only too often fanned from the outside.

Road Transport Board: Advisory Committee.—The President of the Board of Trade has appointed the following gentlemen to be an Advisory Committee to the Road Transport Board:—Chairman, Major Nigel Walker (of Messrs. Pickford's Ltd.); Mr. John Allen, O.B.E. (of the Oxford Steam Plough Co. Ltd.), Mr. Walter Wolsey, Junr., and Mr. F. G. Bristow, F.C.I.S. (representing the Commercial Motor Users' Association); Mr. G. A. Ditfield (chairman National Federation of Commercial Road Transport Associations); Mr. N. F. Wentworth (of Hayes Wharf Cartage Co., Ltd.); Mr. F. H. Griffith (representing London distributing firms), and a representative of the Association of Chambers of Commerce.

Parcels on Leeds Tramways.—Nearly three years ago the Leeds Corporation tramways began to carry goods traffic, the goods being raw material for the Leeds Fireclay Company, whose works are on the south side of the city and their mines on the north. On Monday last this work was extended by the introduction of a new system of carrying parcels. The scheme provides for the running of special parcels cars twice a day—at 10 a.m. and 4 p.m.—on the Roundhay, Chapeltown, and Headingley routes, and it will doubtless be extended later. It has arisen out of the necessity of economising means of transport following the reduction in the number of horses and the supplies of petrol available for this purpose. The charges for parcels, by weight, and irrespective of distance, will be as follows:—Up to 7 lb., 2½d.; between 7 lb. and 14 lb., 3½d.; between 14 lb. and 28 lb., 4½d.; between 28 lb. and 56 lb., 6d. Parcels will be received at the central depot and despatched to various out-depots. Mr. James Hamilton, son of Mr. J. B. Hamilton, the general manager, has been appointed superintendent of the parcels department.

Licences for Women Conductors in London.—In a recent report to the Ilford Council, the general manager of the tramways, Mr. L. E. Harvey, states that he has been notified by the Commissioner of Police that all inquiries as to women applicants for tramway car conductors' licences should be made by the police instead of by the tramway officials. It appears that in September, 1915, when women conductors were first employed, the Chief Commissioner of Police agreed with all managers of the metropolitan tramways that the latter should make all inquiries as to the character, age, etc., and that on the manager's certificate the police would issue a licence. Now for no stated reason this arrangement has been rescinded after nearly two and a half years, during which it has worked satisfactorily. Mr. Harvey has addressed a letter of protest to the Commissioner, pointing out that there was no reason for such an alteration, and that bearing in mind the considerable extra duties of the police at the present time the proposed arrangement would greatly delay the issue of licences.

New Road Linking Teeside and Hartlepools.—A new road which is being constructed on the north bank of the Tees by the Conservancy Commissioners is nearing completion. It stretches from the boundary of West Hartlepool to Port Clarence. An application has been received by the Commissioners from the West Hartlepool Corporation for consent to construct a tramway or light railway along the road, or over the enclosed land by its side. It is anticipated that there will be a large traffic to the new shipyard and steel works, and the Corporation have already planned large areas in the vicinity of Greatham Creek. The Commissioners have also been approached by the Imperial Tramways Company, who desire to run motor omnibuses over the new road. Mr. J. H. Amos, chairman of the Conservancy Commissioners, said that the 30 ft. of additional land which the road included might afterwards be needed to widen the road and the applications were referred to the Finance Committee. The cost of the road, which will reduce the distance between West Hartlepool and Middlesbrough to approximately eight miles, has been about £70,000, the Commissioners paying one half, the Commissioners of Woods and Forests one quarter, and the balance being contributed by the various landowners *en route*. It is unfortunate that the question of public transport on the new thoroughfare was not considered when the road was planned. It is probable that both tramways and motor omnibuses may be needed and ample provision should have been made for one or both of these when the construction was agreed upon. Failure to do this is another instance of lack of co-ordination between various local authorities.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended April 10 amounted to £55,105, an increase of £5,994, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to April 11 (one and a half weeks) the total receipts were £82,106, an increase of £12,698 on the corresponding period of 1917.

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PERSONAL.

Mr. J. W. Hame, tramways manager and electrical engineer, of York, has been granted an increase in salary of £100.

Mr. E. Manville, chairman of the Daimler Motor Company, Ltd. has been elected president of the Associated Chambers of Commerce.

Mr. J. F. Cameron, general manager of Northampton Corporation tramways, has been granted an increase in salary to £400 a year

Mr. H. T. Wakelam, county engineer of Middlesex, has been appointed a member of the Tramways (Board of Trade) Local Advisory Committee, Area No. 1.

Mr. J. H. Estill, formerly commercial superintendent of the Port of London Authority, has re-entered the service of the Authority as commercial manager and will take up his duties on the 15th instant.

Mr. Ernest Hatton, general manager of the Newcastle Corporation Tramways has been elected chairman of the Local Advisory Committee, No. 7 Area, of the Tramways (Board of Trade) Committee. Mr. S. A. Carr is the hon. secretary.

Mr. William Chamberlain, of Oldham Corporation electricity department, has been appointed general manager of the tramways, in succession to Mr. P. Priestley, who has accepted the position of deputy manager of the Liverpool Corporation tramways.

Mr. L. Andrews will read a paper on "Overseas Distribution of Engineering Appliances" before the Institution of Electrical Engineers on Thursday, April 18, at 6 p.m. The meeting will be held at the Institution of Civil Engineers, Great George Street, S.W.1.

Mr. R. H. Swain, chairman of Nottingham Corporation Tramways Committee, very clearly explained the difficulties of the tramway situation to the City Council at their last meeting. The plain fact was, he said, that nothing can be as usual after three years and nine months of war on an unparalleled scale. With enormously enhanced expenditure higher fares were unavoidable, and on behalf of the Committee it was not unreasonable to claim that they had done their best in trying times. They were wide awake to their great responsibility, but the real difficulties to be surmounted were unknown, and therefore not realised by critics

Belfast Tramways and Electricity Committee at a recent meeting passed the following resolution:—"The committee having considered the question of the services rendered by the city electrical engineer (Mr. T. W. Bloxham), the assistant electrical engineer (Mr. B. Croft), and the mechanical engineer (Mr. J. R. Davison) in connection with the strike at the electricity station in December last, it was resolved that they place on record their appreciation of the valuable services rendered by those officers on that occasion and of the successful manner in which they met the crisis; and that a copy of this resolution be sent to each of the officers named.

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Mr. Percy Priestly, general manager and engineer of Oldham Corporation tramways, whose appointment as deputy general manager of Liverpool Corporation tramways was reported in our issue of April 6, served his apprenticeship at the Scotia Engineering Works, Sunderland, and for five years subsequently he was leading engineer. He was then appointed deputy manager of Halifax Corporation electricity works, and subsequently general manager and engineer of the Mexborough and Swinton Tramways Company, a position which he held for nine years. Two years ago he was appointed to his position at Oldham which he is now relinquishing. The salary attached to the position of deputy general manager at Liverpool is £800 per annum.

FINANCIAL REPORTS AND MEETINGS.

A Darracq & Co. announce a dividend of 3½ per cent. on the preferred shares for the half-year.

Birmingham Small Arms Co.—An interim dividend for the half-year ended January 31 on the ordinary shares at the rate of 5 per cent., free of tax, has been declared.

British Westinghouse Electric and Manufacturing Co., Ltd.—A dividend at the rate of 7½ per cent. on the preference shares is recommended for the year ended December 31, 1917.

Halifax Tramways.—The financial year of the Halifax Corporation tramways, which ended on March 31, constitutes a record from the point of view of revenue. From tramway passengers the receipts amounted to £126,506, an increase of £14,480. The passengers carried numbered 22,822,341, an increase of 1,641,757, although the car mileage run was 1,869,367, a decrease of 179,415.

CONTRACTS AND ORDERS.

Poplar Borough Council propose to buy an additional Foden steam wagon for the electricity undertaking. The Electricity Committee report that the present cost of a Foden wagon suitable for the work would be £1,000.

Wolverhampton Corporation's electrical engineer has suggested a plan for the transport of coal from the railway siding adjacent to the electricity works, which has been approved, and automatic plant, rails, etc., are to be purchased at a cost of about £475,000.

The Chloride Company has supplied or has on order ironclad exide battery vehicles for the London and North Western Railway, the Midland Railway, the Great Western Railway, the Great Northern Railway, and the Lancashire and Yorkshire Railway Companies.

Wanted.—Copies of the TRAMWAY AND RAILWAY WORLD of January 1 and 13, 1916; March 9, 1916; April 13, 1916; May 11, 1916; June 8, 1916; October 9, 1916; August 16, 1917; and October 18, 1917.—Reply to Box 12, The TRAMWAY AND RAILWAY WORLD. Amberley House, Norfolk Street, London, W.C.2

Wanted.—Copies of the TRAMWAY AND RAILWAY WORLD, Volume XXXIX, No. 1 (January 1, 1916), to complete files for binding.—Reply to Box, 24, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

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Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash April 11 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	67	67½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4¼	54/4½	56/3
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4¼	46/10½	46/10½
4%	4%	Do. 4% Deb.	100	91	65½	65½
4½%	4½%	Do. 4½% Deb.	100	98½	67½	68
5%	5%	Do. 5% Deb.	100	96	65½	65½
—	—	Associated Omnibus Co., Ord. ..	5/-	3/16	1/2	1/2
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1 1/16	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	106	105½
—	1/-	Bath Electric Trams Pref. Ord.	1	¼	3/6	3/1½
6d.	6d.	Do. 5% Cum. Pref. ..	1	⅛	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort. Deb. ..	100	72½	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
20/-*	28/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Bombay El. Sup. and Tram. 6% Cum. Pref.	10	11½	£9/18/-	£9/18/-
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	42	42½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	88	88½
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5½	5½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91½	91½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	25½	26½
5%	5%	Do. Pref. Ord.	100	106	31½	32
5%	5%	Do. 5% Cum. Pref. ..	100	103	52½	52½
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	83½	83½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	59½	59½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	30	31
6%	6%	Do. 6% Cum. Part. Pref.	100	—	72½	73
5%	5%	Do. 5% Deb.	100	92	76	78½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	70	70
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	7	7
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	78/9	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1	1/16	12/3	12/3
1/3	1/3	City of B. A. Trams	5	5½	81/-	81/-
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	81½	82½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	60	60
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 23/32	7 23/32
6/-	6/-	Do. 6% Pref.	10	12	10	10½
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/3	1/3
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1	1/16	10/3	10/6
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
1/1½	5d.	Hong Kong Tramway	5/-	1/16	17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	½	2/4½	2/4½
6/6	9/6	Lanarkshire Trams Co. ..	10	10½	10 1/16	10 1/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79½
9½d.*	7½d.*	Llandudno & Colwyn B. Ord. ..	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	1/16	1/6	1/6
6d.	6d.	Do. 5% Pref.	1	1/16	5/-	5/-
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	60½	60½
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80½	80½
5%	5%	Do. 5% Inc. Deb.	100	88½	76	77
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	38½	38½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	84½	84½
7½d.%*	9½d.*	Manaos Trams & Ltg. Ord. ..	1	1/16	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	70	70
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	74	73½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70½	70½
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	23½	24½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	34	35½
—	—	Do. 6% Mt. Bds. ..	100	76	30	30
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	88½	88½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	100	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	15/16	17/-	17/1½
9½d.*	9½d.*	New General Traction	1	½	7/3	7/3
8½d.	6d.	Northern Gen. Trans. Ord. ..	1	11/16	12/9½	12/9½
3/-	4/-	Para Elec. Rlys. Ord.	5	4½	75/-	76/3
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	7/1½	7/1½
—	—	Do. 7% Non. Cm. Part Pf.	1	—	13/10½	13/10½
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1	1/16	6/6	6/6
6d.	6d.	Do. 5% Pref.	1	1/16	12/1½	12/1½
8d.	1/4	Provincial Trams. Ord. ..	1	¼	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	86½	87½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	71½	71½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86½	86½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	72	72
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	8d.	Singapore Elec. Trams. ..	5/-	¼	4/6½	4/3
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	92	92
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77½	77½
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	32/6	32/6
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	69	69
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	¼	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	¼	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	72	72
—	—	Metropolitan Dist. Ord. ..	100	21½	13 13/16	14
—	—	Undgd. Elec. Rys. of London ..	10	21½	30/-	30/-
		Do. "A"	1/-	¼	4/6	4/10½
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	103½	103½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	100	100
6%	6%	Do. 6% In. Bonds Rd. ..	—	88½	76½	77½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

Names.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1913	Incr. or Dec.
Aberdare U.D.C. ..	Mar. 31	199	324	+ 125	52	28,492	+ 2,776
Aberdeen Corporation ..	Apr. 3	1,757	2,279	+ 522	44	95,805	+ 13,073
Ayr Corporation ..	,, 6	295	482	+ 187	47	21,039	+ 3,039
Belfast City	,, 5	5,757	8,127	+ 2,370	1	8,127	+ 2,370
Birkenhead Corporation	,, 7	1,501	2,003	+ 502	1	2,003	—
Birmingham Corporation	Mar. 23	16,427	20,749	+ 4,322	51	960,251	+ 147,035
do. Motor Omnibuses ..	,, 23	842	1,268	+ 426	51	55,449	+ 6,300
Blackburn Corporation ..	Feb. 6	960	1,571	+ 611	45½	67,531	+ 11,857
Bournemouth Corporation	April 10	2,376	2,813	+ 437	1½	4,439	+ 1,158
Bradford Corporation ..	Mar. 30	6,390	7,283	+ 893	52	392,389	+ 44,226
Burnley Corporation ..	Apr. 6	2,109	2,139	+ 30	..	..	..
Burton-on-Trent Cor. ..	,, 7	261	407	+ 146	1	407	+ 146
Bury Corporation	,, 7	1,848	1,783	- 65	1	1,788	—
Chatham & District ..	,, 4	1,138	1,341	+ 203	14	15,622	+ 850
Cork Electric	,, 4	462	622	+ 160	14	7,903	+ 1,772
Derby Corporation	,, 6	1,072	1,458	+ 386	1	1,458	+ 386
Dublin United	,, 5	5,903	7,817	+ 1,914	14	99,455	+ 18,991
Dundee City	,, 3	1,339	1,687	+ 348	46½	72,475	+ 8,924
East Ham Corporation ..	,,	1,130	1,364	+ 234	52	70,916	+ 5,069
Exeter Corporation ..	Mar. 22	302	373	+ 71	51	20,106	+ 301
Glasgow Corporation ..	Apr. 6	24,133	28,475	+ 4,342	44½	1,178,075	+ 135,323
Glossop (U.E. Sup. Co.) ..	,, 6	143	195	+ 52	14	2,527	+ 767
Halifax Corporation ..	Mar. 26	1,915	2,648	+ 733	51½	124,380	+ 13,918
do. Motor Buses ..	,, 26	48	57	+ 9	51½	2,551	+ 30
Hastings and District ..	,, 18	968	1,093	+ 125	11	10,521	+ 841
Huddersfield Corporation	Apr. 6	2,582	4,400	+ 818	1	4,400	+ 818
Ilford U.D. Council ..	,, 6	644	997	+ 353	1	891	+ 326
Ipswich Corporation ..	,, 6	414	765	+ 351	1	676	+ 352
Isle of Thanet	,, 6	256	286	+ 30	27	4,826	— 1,253
Kilmarnock Corporation	,, 6	169	249	+ 80	46½	9,739	+ 1,624
Lanarkshire	,, 4	2,347	3,732	+ 1,385	14	43,029	+ 10,457
Lancashire United ..	,, 3	1,742	3,794	+ 2,052	14	34,946	+ 11,581
Leeds City	,, 6	9,081	12,824	+ 3,743	1	11,668	+ 4,825
Leicester Corporation ..	,, 6	3,237	4,765	+ 1,528	..	..	..
Leyton U.D. Council ..	,, 4	1,589	2,096	+ 507	1	2,096	+ 507
Liverpool Corporation ..	,, 6	13,898	17,795	+ 3,897	13½	229,099	+ 37,043
Llandudno & Colwyn Bay	Mar. 22	194	272	+ 78	16	3,805	+ 836
London County Council ..	April 10	49,111	55,105	+ 5,994	1½	82,106	+ 12,698
Maidstone Corporation ..	,, 4	269	378	+ 103	¾	378	+ 108
Manchester Corporation	,, 6	18,622	24,664	+ 6,042	1	24,664	—
Nelson Corporation ..	Mar. 16	194	244	+ 50	50	11,869	+ 1,394
Newcastle-on-Tyne Cor.	Apr. 6	6,800	8,762	+ 1,962	1	8,762	+ 1,962
New St. Helens & Dist. ..	,, 3	977	1,842	+ 865	40	55,748	+ 13,538
Northampton Cor.	,, 5	545	779	+ 234	1	779	+ 234
Nottingham Corporation	,, 4	4,071	5,933	+ 1,862	1	5,933	+ 1,862
Oldham Corporation ..	,, 7	2,840	3,207	+ 367	2	6,416	+ 1,108
Portsmouth Corporation	,, 10	2,035	2,581	+ 546	..	..	..
Reading Corporation ..	Mar. 28	813	1,253	+ 440	52	55,829	+ 11,660
Rhondda Tramways ..	,, 28	1,384	1,728	+ 344	13	19,545	+ 3,432
Rotherham Corporation	Apr. 10	1,805	2,124	+ 319	1½	3,269	+ 204
Sheffield Corporation ..	,, 7	10,977	13,883	+ 2,906	1½	24,691	+ 4,641
Southampton Cor.	,, 3	1,610	2,613	+ 1,003	¾	1,255	+ 405
Southend-on-Sea Cor. ..	Mar. 27	602	707	+ 105	52	44,266	— 402
South Shields Cor. ..	,, 30	811	1,132	+ 321	52	50,874	+ 7,442
Sunderland Corporation ..	Apr. 7	1,598	2,180	+ 582	1	2,180	—
Sunderland District ..	,, 3	643	1,175	+ 532	22	18,407	+ 4,707
Swindon Corporation ..	,, 3	211	349	+ 138	1	349	+ 138
Torquay Tramways ..	Mar. 28	463	801	+ 338	12	8,410	+ 2,753
Tyneside Trys. & Trmrds.	,, 20	670	902	+ 231	12	9,404	+ 2,400
Wallasey Corporation ..	Apr. 6	1,196	1,675	+ 479	¾	1,675	+ 479
Walsall Corporation ..	,, 6	831	1,451	+ 620	2	1,290	+ 459
Walthamstow U.D. Coun.	,, 6	978	1,410	+ 432	¾	1,228	+ 461
Warrington Corporation	Mar. 21	494	725	+ 231	51	31,239	+ 5,821
West Ham Corporation	Apr. 4	3,231	4,185	+ 953	52	193,426	+ 25,820
Wigan Corporation ..	,, 4	1,784	2,571	+ 787	1	2,571	+ 780
Yorkshire (West Riding)	,, 7	1,938	3,168	+ 1,230	14	33,604	+ 8,897

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

Name.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Apr. 8	£47,916	£57,588	14	£762,495	+ £54,032
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Jan. 27	3,521	3,771	44	36,742	+ 610
Brazilian Traction (Mlrs.)	Feb.	6,872,000	7,815,000	8	15,152,000	+ 1,014,000
Brisbane	Feb.	29,800	32,000	8	66,509	+ 3,689
British Columbia .. $	Feb.	451,679	501,150	34	3,984,379	+ 374,000
Buenos Aires Lacroze ..	Mar.	41,337	42,617	39	346,421	+ 69
Burmah Tram. & Light Rs.	Feb.	22,912	22,985	30	184,236	+ 217
Calcutta .. .. Rs.	Apr. 6	68,357	72,404	14	993,280	+ 47,718
Cape Town	Jan.	18,440	19,707	..	..	..
Carthagena and Herrerias	Mar.	2,955	5,316	13	13,358	+ 3,198
Cordoba	Jan.	12,432	12,845	43	134,966	— 641
East India	Mar.	1,647	1,729	35	10,496	— 5,744
Hong Kong .. .. $	Feb. 16	12,514	18,149	7	94,318	+ 102
Kalgoorlie	Dec.	2,894	3,044	52	32,608	+ 1,176
La Plata	Mar.	4,524	5,347	13	4,803	- 1,867
Lima	Feb.	34,228	41,913	8	85,449	+ 14,380
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Mar. 15	34,167	39,530	36	188,724	+ 20,620
Manaos .. .. Rs.	Jan.	146,493	151,871	..	..	..
Manila (8 weeks) .. $	Feb. 23	73,200	93,000	8	93,000	+ 19,800
Montevideo	Mar.	31,979	36,659	21	172,333	+ 14,941
Pernambuco	Mar. 31	3,513	4,341	13	60,384	+ 14,218
Peruvian .. .. $	Mar.	1,017,000	1,119,530	39	9,322,560	+ 1,020,168
Port Elizabeth	Jan.	4,498	4,779	..	..	..
Rangoon	Mar.	6,226	5,955	13	16,978	+ 1,514
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Feb 9	14,829	13,537	6	75,114	— 5,447
Toronto .. .. $	Feb	932,567	981,933	8	2,050,252	+ 115,216
Winnipeg .. .. $	Feb	280,717	298,899	8	638,541	+ 32,879

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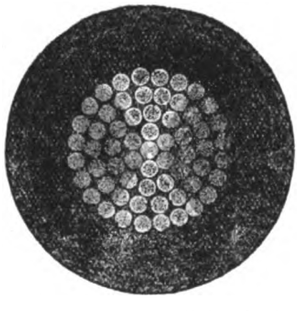
1837.  1918.

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What's wrong with the Track?"

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Defects—Causes of fracture—Method of laying concrete.

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Road metal—Water-gravel—Sand—Clinker-sand—Trass.

Chapter III.—Repairs to Concrete Foundations.
Patching—Partial repairs—Complete renewal.

Chapter IV.—Track Design.
"Follow my leader" policy—Importance of local conditions—Effect on sub-soil—Standard methods—Transverse sleeper tracks—Effect of vehicular traffic and tramway car traffic.

Chapter V.—Rail Packing.
Pitch and tar packing—Materials—Testing and preparation of materials—Prepared tar—Pitch mixtures—Movement of rails—Packing and floating.

Chapter VI.—Rail Laying.
Bad rail packing—Rails canted or twisted—Anchoring and Padding—Rail expansion and contraction—Curving of rails—Springing of rails—Anchoring tracks.

Chapter VII.—Joints, Fish Plates, Bolts and Nuts
Why joints fail—Dished or hammered joints—Movement at joints.

Chapter VIII.—Joint Welding.
Methods of welding—Thermit welding—Electric arc welding process—Expansion and contraction—Oxy-acetylene process.

Chapter IX.—Rail Wear.
At joints—On new tracks—On steep gradients—On wheel tires—Contact of wheel and tire—Leeds special rail section—Railway rails—Depression of check.

Chapter X.—Composition and Manufacture of Tramway Rails and Rail Wear.
Defective rails—Composition of rails—Standard specification—Basic and acid Bessemer process—Sandberg process—Analysis of rails and rail tests—Drop test unnecessary.

Chapter XI.—Corrosion of Tramway Rails.
Causes of rail corrosion—Exposure to sea water—Effect of corrosive liquid.

Chapter XII.—Track Paving.
Effect of vehicular traffic—Cause of loose rails—Importance of quality in setts—Square-dressed setts—Nidged granite setts—Bonawe granite setts—Wood paving—Bedding of setts—Laying and ramming.

Chapter XIII.—Reconstruction.
Removal of tracks—Temporary tracks.

Chapter XIV.—Surface Drainage and Rail Maintenance.
Rail cleaning—Rail grinding—Rail planing.

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THE

Tramway & Railway World

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

COUNTY BOROUGH OF SUNDERLAND.

The Corporation are prepared to receive tenders for the supply and erection at their Electricity Works of one Forced Draught Cooling Tower. The work to embody the use of such timber as can be worked in from two cooling towers at present occupying the site of the new one.

Specification and Form of Tender may be had upon application to the General Manager, Mr. Alfred S. Blackman, Electricity Offices, Dunning Street, Sunderland, upon payment of a deposit of £1, which will be returned only after a bona fide tender has been opened.

Tenders, endorsed "Cooling Tower," and addressed to the undersigned, at the Town Hall, Sunderland, to be delivered not later than first post on Wednesday, April 24th instant. The Corporation do not bind themselves to accept the lowest or any tender.

H. CRAVEN,
Town Clerk.

Town Hall, Sunderland.
April 3, 1918.

ISLINGTON BOROUGH COUNCIL.

The Lighting Committee of the Islington Borough Council invite Tenders for the supply and erection of Machinery and Plant, viz.:

(a) 5,000-KW. Steam Turbine, Alternator, Exciter, Condensing Plant, Switchgear, Piping, etc.
(b) Water-tube Boilers, Coal Conveyor, Telpher, Burners, Steam Piping, and other Accessories.

Specification, General Conditions, and Form of Tender may be obtained on application to the Electrical Engineer, 50, Eden Grove, Holloway, N.7, on or after April 29th, 1918. A deposit of £2 2s. will be required, which will be returned on receipt of a *bona-fide* Tender.

Tenders, under seal, and endorsed on the outside "Tender for Electric Lighting Plant," to be addressed to the undersigned, and delivered at the Town Hall, Upper Street, Islington, N.1, not later than noon, Friday, May 24th, 1918.

(By order) C. G. E. FLETCHER,
Town Clerk.

Town Hall, Upper Street, N.1.
April 12th, 1918.

COUNTY BOROUGH OF ROTHERHAM.

The Tramways Committee are prepared to receive tenders for the supplies of Tramway Oilskins and Mackintoshes required for the inspectors, motormen, and conductors of the Tramways Department.

The person or firm whose tender is accepted will be required to enter into a contract which will contain the usual Fair Wages Clause.

Tenders, endorsed "Oilskins and Mackintoshes," to be sent to me not later than the 30th instant.

The Corporation do not bind themselves to accept the lowest or any tender.

CHAS. L. DES FORGES,
Town Clerk.

Town Hall, Rotherham.
April 18, 1918

COUNTY BOROUGH OF NEWPORT.

Electricity Department.

The Corporation invite tenders for
E.H.T. and L.T. Switchgear.

Form of tender and contract, specification and drawings, and any further information may be obtained on application to A. Nichols Moore, M.I.E.E., Borough Electrical and Tramways Engineer, Town Hall, Newport, Mon., on payment of five guineas, which deposit will only be refunded on receipt of a bona-fide tender. Further copies can be had on payment of 15s. 6d. each, which is not returnable.

Tenders must be enclosed in a sealed cover provided, and addressed to the Town Clerk, Town Hall, Newport, Mon., and endorsed in the left-hand corner, "Tender for Switchgear, Section 3," and delivered at my office by hand or through the post (registered) not later than 10 a.m. on May 1, 1918.

The Corporation do not bind themselves to accept the lowest or any tender.

ALBERT A. NEWMAN,
Town Clerk.

Town Hall, Newport, Mon.
April 15, 1918.

PLYMOUTH CORPORATION.

The Plymouth Corporation are prepared to receive Tenders for the Supply of:—

(a) Turbo-Alternator.
(b) Converter.
(c) Transformers.
(d) Switchgear.

Specifications and Forms of Tender may be obtained from the undersigned. Applicants must state the Sections required, and make a deposit of £1, which will be returned after receipt of a *bona-fide* Tender. Tenders to be delivered by April 29, 1918.

E. G. OKELL,
Borough Electrical Engineer.

Prince Rock, Plymouth.
April 10, 1918.

URBAN DISTRICT COUNCIL OF HOYLAKE & WEST KIRBY.

The Electricity Committee of the above Council invite Tenders for—

Superheater for 30 ft. × 8 ft. Lancashire Boiler.

Particulars of pressure, etc., may be obtained from the Electrical Engineer, Electricity Works, Hoylake, Cheshire.

RODERICK WILLIAMS,
Clerk to the Council.

Council Offices, Hoylake.
April 15th 1918.

POSITIONS VACANT.

NORTHAMPTON CORPORATION TRAMWAYS.

Wanted, Engineer-in-Charge for Tramways Power Station, ineligible. Station plant: Usual D.C. turbos. Practical man preferred. State wages and experience.

Also Plate Layer (working) accustomed to track repairs; must be ineligible. State wages required, references, etc., to GENERAL MANAGER, St. James', Northampton.

WAKEFIELD CORPORATION ELECTRICITY DEPARTMENT.

Charge Engineer wanted immediately to take charge of eight-hour shift in a high-tension A.C. power station, plant capacity 4,000 KW; present wage £3 10s. per week, including all bonuses. Only applications from men having had experience in a similar post will be considered.

Applications, giving full details of experience and age, to be sent to—

H. A. NEVILL,
City Electrical Engineer.

Relief Charge Hand.

Wanted, reliable man to act as Relief Charge hand; must have good experience in the examination and adjustment of Tramcar Trucks and equipment. Permanent position to a suitable man. Rate, £2 16s. 3d. per week of six shifts of 54 hours.

Reply, stating age, experience and with copies of testimonials, to GENERAL MANAGER, Corporation Tramways, Coventry.

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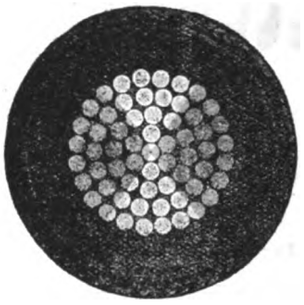
1837.  1918.

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THE
Tramway AND Railway World

Established in 1892 and Published by

THE TRAMWAY & RAILWAY WORLD PUBLISHING CO., Ltd.
AMBERLEY HOUSE, NORFOLK STREET, LONDON, W.C.

Sixty-four issues are published annually, including twelve large numbers which are fully illustrated and printed on art paper.

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SATURDAY, APRIL 20, 1918.

THE COLLECTION OF TICKETS.

It is now a good many years since Mr. Mozley, general manager of Burnley Corporation Tramways, began to advocate the system of collecting passengers' tickets before they leave the car. Though the scheme succeeded in Burnley, it has not been generally adopted, probably because of the additional labour involved, and because in the case of tramways with very heavily loaded cars, it would not be very practicable. The object in view originally was not so much the saving of the used tickets as the checking of passengers so as to prevent the evasion of payment. On big systems, where the tickets are often large so as to provide space for many stages being printed on them, and where the number of tickets issued runs into hundreds of millions, the question of saving the used tickets for the purpose of re-pulping became of importance. It was also desirable that the floors of the cars and the streets at stopping places should not be littered with tickets. Accordingly, in Glasgow and some other places boxes were fixed on the cars into which passengers were invited to drop their tickets on leaving. A large proportion of passengers observe the request, and quite an appreciable sum is obtained from the sale of the used tickets. The London County Council tried the box experiment a few years ago, but the police for some mysterious reason objected to the box, and nothing further was done. Before the war all that could be said was that metropolitan cars and streets were always littered with old tickets, and much really needless sweeping-up had to be done. But the reason for collecting them is now much stronger. The paper famine is becoming more and more acute, and the necessity for preserving the old tickets and sending them to the paper-maker is becoming correspondingly greater. That the objection raised by the Metropolitan Police to collecting-box experiments made by the London County Council can be got over is shown by the fact that the South Metropolitan Tramway Company have had ticket-receiving boxes fixed on their cars. Mr. Mason, the general manager, has combined the two schemes of checking the payment of fares and using boxes. Passengers who cannot produce their tickets on leaving the car are treated as not having paid, and must pay before leaving. Recognising that it is not always possible to check every ticket, boxes are provided, and passengers are asked, if they find that their tickets are not collected, to drop them in the box. Apart even from the question of the checking of payment of fares, the paper problem is becoming so acute that it behoves every tramway undertaking in the country to provide collection boxes on the cars, and if necessary to placard these vehicles with notices requesting, urging, and even beseeching the passengers to drop their tickets in the boxes. How long the present waste of thousands of millions of tramway and omnibus tickets in London is to go on is an important part of the whole question. The sooner the waste is stopped the better; and, moreover, the stoppage of it will pay.

THE BRADFORD ACCIDENT.

BOARD OF TRADE REPORT.

Major J. W. Pringle has made his report to the Board of Trade in regard to the accident which took place on the Allerton section of the Bradford Corporation tramways on February 1, when a car left the rails on a curve and overturned, the driver being killed and nineteen passengers injured. The upper part of the car was considerably damaged, but the under part, wheels, axles, etc., were uninjured.

The car was of the single truck, double deck with top cover, vestibule type, and weighed about 11 tons. It had seating capacity for 22 passengers on the lower and 38 on the upper deck. The brake equipment consisted of the usual handbrake working single blocks on each of the four wheels, the electric rheostat brake worked from the controller, and the Spencer-Dawson power brake worked from the platform by a small release handle. This brake has two shoes on each rail grooved to fit the rail and actuated by powerful springs which are normally prevented from depressing the shoes by air pressure (350 lbs. to the square inch) acting on oil and hydraulic cylinders. In 1914 the entire under-structure and equipment of the car were renewed, two 40-h.-p. Siemens motors being fitted. The car was given a complete overhaul on the 26th of January last and new tires were provided. The permanent way on the section was laid in 1902. Grooved tails, weighing 103 lbs. per yard, were laid on 6 in. or more of Portland concrete. The width of the groove of the new rails was 1⅛ ins. on the curve where the accident occurred, and now varies from 1⅛ in. to 1⅛ in. The present condition of the rail is adequate for speeds considerably in excess of those authorised. For a distance of 170 yards before the curve the track is straight and there is a gradient of 1 in 16·8. The curve has a length of 110 ft., which at no point has a less radius than 83¾ ft., where there is a super-elevation of 1¼ in.

By the Board of Trade regulations the speed was limited to four miles an hour on the curve, and all cars have to be brought to a standstill before entering the curve on the downward journey. The deceased driver, who was 30 years of age had had sixteen years' experience on the Bradford tramways, and is stated by various witnesses to have been one of the most careful drivers in the employ of the Corporation. The accident took place about an hour-and-a half before sunrise; the morning was very foggy and evidence shows that it had not been possible to see more than half-way across the road.

Major Pringle remarks that it was difficult to understand why so careful and experienced a driver permitted the car to attain high speed at such a spot. He does not think the driver had been following the rule prescribed of keeping the electric brake at the second notch. On the other hand, he thinks it is not improbable that the driver mistook his position owing to the darkness and fog. The only alternative explanation is that the driver was suddenly taken ill. In support of this theory there is the uncorroborated statement of a witness who said that the driver was leaning against the front door. There is also the circumstance that judging from the position of the body under the side of the car the deceased appeared to have been thrown from the platform. All street lamps in Bradford had during the present winter been kept extinguished between 11 p.m. and daylight. This regulation may have been considered necessary with a view to economy and the possibility of an air attack, but it made tramway traffic difficult and reduced the safety of travel. Danger points at least require to be lighted during traffic hours.

Major Pringle finds that the accident was caused by speed very much in excess of that authorised, and that there was no failure in brake or other equipment to account for the high speed attained. Fog and darkness appear to have been contributory factors to the extent that the driver may have mistaken his actual whereabouts.

The following recommendations are made :—

(1) That the pole indicating the compulsory stopping place be altered in position to accord with the wording of bye-law II (20), and the stop properly enforced in future.

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(2) That the following alterations be made in the speed regulations:—(*a*) Para, (*h*), under 12 miles an hour, to read:—" In Allerton Road, between the east end of the curve at Chapel Lane and Four Lane Ends." (*b*) Para. (*i*), under 6 miles an hour, to read: " In Allerton Road, between Stoney Lane and the west end of the curve at Chapel Lane, on the downward journey."

(3) That danger points, such as Board of Trade compulsory stopping places, be indicated at night by some method of lighting. It is suggested that a red lamp be used.

THE ROAD TRANSPORT BOARD.

In previous issues we have published the names of the members of the Road Transport Board and of its Central Advisory Committee as well as an outline of the local organisation for the thirteen districts into which Great Britain is divided. Each of these districts has a Divisional Board with an Advisory Committee. These particulars appear in collected form in the *Board of Trade Journal* of April 18th as well as some other details. The formal terms of reference to the Road Transport Board are as follow:—

(*a*) To co-ordinate the work of the existing Government Departments in connection with road transport.

(*b*) To determine what further measures are necessary to ensure the most economic use of road transport vehicles and their efficient allocation for meeting requirements as may arise from time to time for the transport of food, munitions and other war materials and for the essential needs of the trade and industry of the country.

(*c*) Subject to the direction of the Board of Trade, to give executive effect thereto.

In addition to the thirteen districts already referred to, the Transport Board have further divided the country into approximately 100 areas, in each of which it is proposed to appoint an Area Road Transport Committee. The constitution of these Committees will necessarily vary according to the district, but, speaking generally, they will be constituted as follows:—Four members appointed by the Food Control Committees within the area; four members of other local interests; two members appointed by the Horse Transport Department of the Board of Trade; one member appointed by the Ministry of Munitions. The total number of members will not exceed eleven, including the Chairman, who will be selected by the members from their number.

As soon as the local organisation has been set up, it is proposed, as a preliminary measure, to provide for the registration of all power-driven vehicles and of four-wheeled horse-drawn vehicles with a load capacity of over 20 cwt. A scheme of priority classification is in course of preparation so that in case of emergency vehicles carrying goods in a low class of priority may be employed to carry goods in a higher class. A permit will be issued in respect of each vehicle in order that the owner may understand that on orders from the Board he must place his vehicle, fully equipped, at their disposal. The question of the co-ordination of the work of Government Departments in connection with road transport is being considered by a Sub-Committee of the Board.

The Offices of the Board are at 9, Berkeley Street, London, W.1.

LICENCES FOR WOMEN CONDUCTORS.

In the House of Commons on Wednesday, April 11—

Mr. Gilbert asked the Home Secretary whether it is proposed that in future all inquiries as regards the characters of women employed as tramcar conductors in the Metropolitan area shall be made by the police instead of the various tramway authorities; and for what reason this change has been made.

Sir G. Cave: The Commissioner of Police is under a statutory obligation to satisfy himself as to the character and good behaviour of an applicant for a licence before granting the licence. In the case of women, he agreed provisionally to accept the result of inquiries made by the tramway and omnibus authorities and companies, but experience has shown that these inquiries were not always adequate, and it had been found necessary to resume direct police inquiries, such as are made in the case of men, except where the company or authority gives a written undertaking to make proper inquiry about each candidate.

Mr. Gilbert: Arising out of that can the right hon. gentleman state how many tramway authorities this will apply to? Does it apply to all tramway authorities?

Sir G. Cave: I should like notice of that.

MEAT RATIONS FOR WOMEN CONDUCTORS.

Mr. Bowerman in the House of Commons on April 15 asked the Parliamentary Secretary to the Ministry of Food whether he had received representations from the Deptford Local Food Control Committee regarding the withholding of a supplementary meat ration from women conductors on omnibuses and tramcars, although granted to male workers engaged on precisely the same work; whether consideration had been given to such representations and if so would he state the result?

Mr. Clynes.—The representation referred to has been received. The question of extending supplementary meat rations to women conductors of omnibuses and tramcars is under consideration along with similar claims on behalf of women doing the work of men, and a decision will be communicated to all Food Control Committees as soon as possible.

PROBLEMS OF TRAMWAY MANAGEMENT.

Mr. R. R. Stuart Pilcher, general manager of Aberdeen Corporation tramways, read a paper before the Aberdeen Rotary Club on April 11 on the subject of tramway management. Dealing with the question of rush hour traffic, Mr. Pilcher said that it was an advantage of trailers that they carried nearly as many passengers as a motor car with about half the operating expenses, and the capital cost was comparatively low. Trailers could not, however, be conveniently introduced without a circular terminus in the centre of the system in order to avoid the necessity of shunting. Sooner or later the use of trailers would become unavoidable in order to handle the tramway traffic which had developed in Aberdeen. The larger the city, the more urgent the problem of rush hour traffic. Smaller systems should look ahead, and by building additional lines in parallel thoroughfares prepare to meet the problem before it became too costly. Aberdeen city fathers had shown great foresight when Union Street was constructed in providing a fine wide thoroughfare for many years to come. Where great congestion was caused, it would be of assistance if the cars stopped at alternate stopping places. This would cut out approximately half the stops and consequently the average speed would be greatly increased. Another method of alleviating rush traffic was to approach the different manufacturing companies and ask them to change the meal hours so that all the workers should not start and leave off at the same time. In Aberdeen they had also endeavoured by advertising to induce ladies to do their shopping earlier.

The question of fares was a much discussed subject. The fares should be fixed so as to bring in a sufficient revenue to meet all capital charges, to pay proper wages to employees, and to provide an adequate reserve fund for contingencies. There should also be sufficient funds to keep the equipment up to date and to provide a comfortable and frequent service of cars. In America they deliberately discouraged the short distance traffic, but he thought that facilities should certainly be granted to the short distance riders, although the longer rides should be correspondingly cheaper, in order that people might reside at a distance from the centre of the city. If garden cities were to be successful, the schemes must include cheap transit facilities.

While municipal tramways should make some profit, there was a danger if too much profit were obtained. There were towns where the rates had been reduced as much as 6d. in the pound by tramway profits. In such cases tramway passengers were paying too much for their rides in order to reduce the rates. On the other hand, where no reserve funds were accumulated passengers were being carried at less than cost. In some places, owing to the high rates, a specially favoured class of municipal employees had been formed and this had set the pace for wages for the rest of the systems in the country. In some cases these systems were subsidised from the rates to the extent of 4d. in the pound. When municipalities acquired public utilities these should be conducted not so much for the benefit of the general ratepayer but rather for the benefit of the ratepayer who is also a tramway rider. In Aberdeen they recognised that the ratepayer had a right to a certain amount of profit by obtaining power to devote a third of the profits to public purposes, but the amount which could be given to the Common Fund in any one year was restricted to £2,000. This prevented heaping up too much in reserve funds and also prevented too much being given to the rates. Owing to the increasing cost due to the war, many systems had had to raise the fares in order to meet the increased cost of operation, but there was a limit to the revenue to be derived in this way, and in some cases it actually had the opposite effect, so that many systems would have to be aided by the rates for the first time in their history.

PETROL LICENCES ISSUED.

The following table from the *Board of Trade Journal* shows the number of licences which have been granted to each class of user of motor spirit up to the end of March, 1918:—

	1st issue.	2nd issue.	3d issue.	4th issue.	5th issue.
Private cars ..	94,111	84,610	70,452	57,720	
Private cycles ..	95,098	48,580	34,462	29,103	2,000
Doctors' cars ..	14,636	11,966	10,698	10,701	
Hackney vehicles..	22,189	19,061	16,351	14,958	
Commercial vehicles	35,577	32,290	38,880	33,396	
Industrial processes	44,303	41,375	60,104	54,427	
Total	305,914	237,882	230,947	200,305	2,000

In reply to a question by Sir J. Fleming in the House of Commons the President of the Broad of Trade stated that the general situation regarding the supply of motor spirit had not altered, and he regretted that the necessity for continued economy precluded the possibility of any relaxation affecting the use of petrol for conveying persons to church.

The Economy Section of the Petroleum Executive state that the demands of the Fighting Services for petrol are daily becoming greater. The public are invited not to hire motor cars or to use taxicabs when they can walk or avail themselves of public means of conveyance. Whilst taxicabs must be available for business and other necessary purposes, no one should use them unless imperative.

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INCREASES IN TRAMWAY FARES.

The increased cost of materials and increased wages are placing a heavy burden upon the London County Council tramways department, and it is regarded as inevitable that an increased scale of fares should be brought into effect at an early day. The workmen's fare even before the war was understood to entail a loss of about £80,000 a year, and this loss has greatly increased owing to higher cost of operation.

The Tramways Committee of the Leeds Corporation have approved a scheme for increasing fares, which it is expected will add about 50 per cent. to the revenue. The scheme involves the abolition of halfpenny fares and all other fares to be increased on the following schedule :—

One mile to be 1d. fare: all 1d. fares to run consecutively from the centre to each terminus and in no case to be overlapping.

The present 1d. fare stage to be maintained as the distance for a 1½d. fare from the centre of the city, *i.e.*, two miles for 1½d.—an increase of 50 per cent.

For each further consecutive two miles an additional 1½d. fare to be charged. The present 2d. fare would thus become 3d., the 3d. fare 4½d., the 4d. fare 6d., and so on.

The arrangement of one overlapping 1½d. fare of 2 miles beginning at the end of the first penny stage from the centre, and to be continued for each succeeding two miles.

In the case of children's fares and workmen's fares, these would be half the ordinary fares, except in cases where the half of the ordinary fare involves a question of farthings. In cases where the ordinary fare was 1½d., 2½d., 3½d., and so on, the children's and workmen's fares would be 1d., 1½d., and 2d.

The Committee explain that the new scheme has been rendered necessary by the great increase in wages recently awarded and a further increase which is involved in the arbitration pending on the application of the 12½ per cent. bonus. The renewal of the track and rolling stock, for which it is estimated that a sum of £85,000 per annum is required, make the increase of 50 per cent. in the fares imperative.

Birmingham Tramways Committee has applied to the Board of Trade for authority to revise the tramway fares by shortening the penny stages. Under a Board of Trade Order the penny fare has covered a journey of two miles. The halfpenny fare hitherto charged for children has been withdrawn on tramway cars and omnibuses. The penny fare for adults on motor omnibuses was withdrawn on Monday last, the minimum fare now being twopence; all stages have been increased by one penny.

The general manager of the Reading Corporation tramways, Mr. G. F. Crane, has recommended certain inecreases in fares and alterations to stages, in order to meet the increased charge for wages entailed by the acceptance of the award of the Committee on Production. A new scale of charges for parcels also is to be introduced.

SOLDIERS AND WORKMEN'S FARES,

The King's Bench Division of the High Court decided on April 16 that a corporal in the Royal Defence Corps engaged in guarding interned prisoners was not entitled to travel on a tramcar at workmen's fares. The case arose on an information on behalf of the Yorkshire (West Riding) Tramway Company against Corporal Robert Brown, Leeds, that he refused to pay a fare which might be legally demanded. According to the report of the case given in the *Times*, the respondent travelled by one of the company's cars from the Leeds Boundary to Lofthouse Park. He tendered 2d., which was the workman's fare. He said that he was entitled to travel at the workman's rate, and he refused to pay the full fare. The fare which he paid was the legal fare for the journey payable by those who came within the terms of section 70 (1) of the Wakefield and District Light Railways Order, 1901. Since 1912 the respondent (who was an old soldier) had been employed as a caretaker at All Hallows Institute, Leeds, and on the outbreak of war he joined the Royal Defence Corps, and for some time he had been engaged at Lofthouse Park, a German internment camp, to guard the persons there. After being on duty at the camp for 24 hours he usually had 24 hours off duty. He had been in the habit of doing this, and had continued his duties at the institute, for which he received the weekly wage of £1. His duties at the camp consisted in posting entries on guard, picket duty, escorting prisoners from one camp to another or when out for exercise, assisting officers in roll-call, and cleaning equipment and quarters. For these he received daily pay from the Army.

The magistrates were of opinion that the respondent by reason of his duties as caretaker at All Hallows Institute, Leeds, or by reason of his duties as guard at the internment camp, or both, was a daily labourer within the meaning of section 70 of the Wakefield and District Light Railways Order, 1901, and that the fare paid by him was the fare which might legally be demanded for the journey. They dismissed the information, and the Company appealed.

Mr. Justice Darling (whose opinion was supported by Mr. Justice Avory and Mr. Justice Atkin) said that the appeal must be allowed. It was clear that the respondent did not come within the privilege or exemption of section 70 of the Order of 1901 unless he was a daily labourer. He was not an artisan, nor was he a mechanic. In his work as caretaker of the institute he was assisted by his wife, and he was not bound to be there every day. Nor was he bound to act at the internment camp every day. It would be an abuse of language to call him a daily labourer by reason of his work at the institute. In his work at the camp he was a corporal in the Royal Defence Corps, and his duties were such as were ordinarily performed by a soldier. The justices ought to have convicted.

The case was remitted to the justices with an expression of the Court's opinion that the respondent was not a daily labourer, and with a direction to convict.

TRAMWAY EMPLOYEES WAGES.

Dover Corporation has accepted the award of the Committee on Production and granted its employees an increase in wages, bringing them up to £1 per week above pre-war rates.

The Maidstone Tramways Committee have adopted the award given by the Committee on Production and the consequent increase in wages for the coming year will be about £800. Including concessions previously given to the employees, the total increase in wages as compared with last year will amount to £1,250.

Croydon Corporation have refused to accept the recommendation of the Tramways Committee to grant the increase in wages awarded by the Committee on Production. There is no prospect of an immediate strike, but the employees will make an appeal to the Government for arbitration and there can hardly be any doubt that they will be successful.

MISCELLANEOUS NEWS AND NOTES

Strike Averted at Cork.—The differences between the Cork Tramway Company and their drivers and conductors have been amicably settled, the company's latest offer having been accepted by the men.

Standing Passengers at Manchester.—The Manchester Watch Committee, at the request of the Tramways Committee, have relaxed the rule as to the number of passengers allowed to stand in the cars.

Late Cars discontinued at Birmingham.—Commencing on Monday next, the last cars will leave the central termini at 11 p.m., instead of 11.30 p.m. At present there is no intention further to curtail the services.

Institution of Electrical Engineers.—Mr. E. C. McKinnon will read a paper on "Large Batteries for Power Purposes" on Thursday, April 25, at 6 p.m. The meeting will be held at the Institution of Civil Engineers, Great George Street, S.W.1.

Protecting Women Conductors.—"These women are performing a difficult task and must be protected," said Mr. Chancellor at Thames Police Court in sentencing a woman to fourteen days' imprisonment for being drunk and assulting a tram car conductress.

Edinburgh Tramway Management.—In view of the prospective taking over of the working of the Edinburgh tramways, the Town Council have instructed the Tramways Committee to consider and report on the duties and salary of the tramway manager whom the Corporation will appoint. The lease of the Edinburgh and District Tramways Company expires in June, 1919.

Manchester Tramways and Wounded Soldiers.—Some criticism having been directed against the Manchester Tramways Committee for their refusal to carry wounded soldiers free on the cars, Mr. J. M. McElroy, the general manager, has explained to a Press representative that the military authorities were against giving unrestricted free riding to the wounded. The Committee had granted tokens to all local hospitals and these were distributed to the wounded men as the authorities thought fit.

Keep to the Left.—The Huddersfield Corporation are attaching to the electric standards in the busiest centres of the town traffic regulation plates directing footpassengers to keep to the left. It will be recalled that the general adoption of this practice was vigourously supported at the meeting of the Municipal Tramways Association at Blackpool in September last. The object is to accustom pedestrians to face the traffic when stepping on to the roadway. There is no doubt that the change greatly increases the safety of the public.

Lighting of London.—At the meeting of the London "Safety First" Council on Wednesday, it was resolved to invite the Central Lighting Authority, through the Home Secretary, to adopt a diffused, substantially uniform illumination in all districts in the Greater London area, where military exigencies and local conditions permit. It was also decided to suggest to the lighting authorities in this area that, after the war, the use of appliances should be encouraged to provide diffused street illumination in substitution for the glaring lighting which prevailed before the outbreak of war.

Tramway Cars as Kitchens.—The first electric tramway car to be used as a travelling kitchen has been fitted up by the Halifax Corporation. The car is equipped with electrical cookers, etc., capable of dealing with 1,000 portions of food and carries a tank holding 1,200 gallons of water. Current for cooking is obtained from the trolley wires. Meals can be served from either side of the car and there is a cash office on either end. Alderman C. J. Spencer, Chairman of the Halifax Corporation Tramways Committee, was some time ago appointed director of the Central Kitchens Division of the Ministry of Food.

Night Travelling Facilities in London.—Mr. Bowerman in the House of Commons on April 16 asked the President of the Board of Trade whether, before sanctioning any curtailment of the railway and tramway services within the Metropolitan area, steps would be taken to ensure that the travelling facilities at present available for the workers employed upon daily papers and others whose work was necessarily continued until the early hours of the morning, the majority of whom live long distances from their places of employment, should not be curtailed. Sir A. Stanley replied that so far as the Board of Trade were concerned every endeavour would be made in imposing such travelling restrictions as might be necessary to avoid the infliction of undue hardship on workers. So far as he knew, it was not proposed now seriously to curtail the night services.

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Heavy Damages for Tramway Accident.—At Liverpool Assizes on April 15 a jury awarded £500 damages against Blackpool Corporation to Gerard Ryder, a boy of eight years, who had been run over by a tramcar belonging to defendants. It was stated that the boy was standing on the tramway track on Blackpool Promenade watching a motor car which was emitting smoke and making a loud noise, when a tramcar struck him. He was so injured that his left arm and one of his toes had to be amputated. For the defence it was contended that the boy in hurrying across the promenade ran into the tramcar and was knocked down before the driver had any chance of pulling up.

Difficulties at Newcastle.—Most of the motormen on the Newcastle Corporation Tramways are between 41 and 51 years of age, and under the provisions of the Man Power Bill the majority of these men will be withdrawn from the tramway services. Mr. Earnest Hatton, the general manager, recently stated to a press representative that if these men were taken indiscriminately it would not be possible to continue the present service. Women were unable to face the gradients of the Newcastle system or the physical exertion required. It is regarded as probable that tramway drivers will be classified under the heading of transport, but there are no prospects at present to support this expectation. Steps were being taken, however, to clear away any uncertainty in the matter.

Tynemouth and Railless Trolley.—A sub-committee appointed by the Tynemouth Town Council to consider the various suggestions for providing greater transport facilities has reported in favour of the railless trolley system as an extension of the tramways, and in place of the motor omnibus service to Preston, which has been withdrawn owing to the petrol shortage. The tramways in Tynemouth and the light railways linking up Tynemouth with Whitley, Monkseaton, and Cullercoats are owned and operated by the Tynemouth and District Electric Traction Company and under the usual purchase clause the Town Council has the right to purchase the tramways and a short section of the light railway within the town area in 1920. It is in contemplation of this purchase that steps are being taken to provide for an extended service. The light railways outside the town area will not be purchasable until 1922.

Reduction of Tramway Services.—The Board of Trade has decided that there shall be a substantial reduction in tramway services. What the exact extent of the reduction on various tramways will be has not yet been determined, and the reports which have appeared in various newspapers are inaccurate. On many tramways in the South of England the reduction will, however, be considerable, and it is possible that on certain lines traffic will have to be entirely suspended. The new Man Power Bill will make further demands on tramway labour and it is necessary to conserve coal supplies. In some of the large centres it has become exceedingly difficult for the tramway authorities to deal with munition traffic, and in these centres the services must be maintained. The local advisory committees which have been appointed under the Tramways (Board of Trade) Committee clearly understand the situation, and they are generally working in harmony with the main committee. The public must, of course, be seriously inconvenienced, but in the present circumstances there is no way of avoiding the reduction in the services. It is probable that the changes will take effect by the end of May.

Anonymous Abuse of Tramway Policy.—Mr. R. H. Swain, chairman of the Nottingham Corporation Tramways Committee, referring to the criticism of the increase in fares which had recently been made, said that in all his years of public work he had never been so viciously, and he thought unfairly attacked in anything he had undertaken in connection with the Corporation. Nothing short of murder would have justified some of the remarks made to him by correspondents, many of them anonymous, and it made him feel like an escaped criminal. The *Nottingham Guardian*, alluding to Mr. Swain's remarks, said that "Mr. Swain is fully capable of defending himself against fair and honest criticism, but many of the correspondents are neither fair nor straightforward. So long as wages, maintenance and working costs continue to advance, there will always be a prospect of higher fares or shorter stages. Few, if any, systems are so perfect as to be beyond criticism, and those who have complaints to make should remember that the times are abnormal. The only useful criticism at present is criticism of the constructive type. Mere vulgar abuse, of which the chairman of the Nottingham Tramways Committee conplains, is moreover vexatious, spiteful and vindictive." This is a sane view to take of the situation, and we think it would be a practically helpful measure if our contemporary were to refuse to publish any letters in its own columns dealing with tramway subjects to which the name of its writer was not appended. Numerous letters have recently appeared in the Nottingham papers, the publication of which can not possibly serve any useful purpose, and as our contemporary itself remarked, it is a pity that the dearth of paper should be increased by writers lacking the courage of their opinions, and apparently destitute of practical ideas for the general betterment.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended April 17 amounted to £55,362, an increase of £6,342, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to April 17 (two and a half weeks) the total receipts were £137,696, an increase of £19,268 on the corresponding period of 1917.

PERSONAL.

Mr. J. K. Brydges, borough electrical engineer of Eastbourne, has been granted an honorarium of £50 for extra work.

Mr. J. W. Turner, electrical engineer of Huddersfield Corporation, has been granted an increase in salary from £400 to £500 per annum.

Mr. W. Fennell has been appointed engineer and secretary to the Northwich Electric Supply Company, in succession to the late Mr. W. Boyd.

Councillor W. C. Turner has been elected chairman of the Belfast Corporation Tramways Committee and Councillor Wm. Bennett vice-chairman.

Mr. J.M. Calder, chief assistant engineer of the Reading Corporation tramways department, has been granted an increase in salary from £275 to £350 per annum.

Sergeant C. E. Defer, R.F.A., has been awarded the D.C.M., and **Corporal S. A. Wraight,** R.F.A., the Military Medal. Both were conductors on the London County Council tramways.

Mr. David Williams, traffic superintendent of the Bury Corporation tramways, having been discharged from the army after a considerable period of service owing to an accident, has resumed his duties.

Mr. A. Hugh Seabrook, general manager of the Marylebone electricity department, has resigned. It is stated that Mr. Seabrook has been appointed to a position of national importance. The Electricity Committee accepted Mr. Seabrook's resignation with regret and wished him every success in his wider sphere of usefulness.

Lieut. John Alexander Mayne, R.E., elder son of the late Mr. John Mayne, procurator-fiscal of Linlithgowshire, has been killed in action. He was formerly employed by the Glasgow Corporation tramways as a civil engineer and was afterwards with the Admiralty at Rosyth, and latterly with the North British Railway Company at Edinburgh. He joined the Army in 1916.

CONTRACTS AND ORDERS.

Mavor and Coulson, Ltd., have an order from the Glasgow tramways department for commutators.

Dick, Kerr and Co., Ltd., are to repair for the Glasgow electricity department two 3,000 kw. turbine sets at a price of £23,000. The sets have been in use for over fourteen years at Port Dundas.

Electromobile (Leeds) Ltd., have an order for one 5-ton electric tipping vehicle with lead battery, at £1,430, for use for the remova- of ashes from Dalmarnock generating station of Glasgow Corporal tion.

The Chloride Electrical Storage Company have supplied ironclad exide batteries for vehicles to the London and North Western, the Midland, the Great Western, the Great Northern, the Lancashire and Yorkshire, the Great Eastern and the Great Central Railways. In a previous issue it was inadvertently stated that the Chloride Company had supplied the electric vehicles. They do not manufacture the vehicles, but, as stated, they have supplied the batteries for them

FINANCIAL REPORTS AND MEETINGS.

Lancashire Dynamo and Motor Company has received the permission of the Treasury to issue 50,000 new ordinary shares at £1 each at a premium of 7s. 6d.

Johnson and Phillips, Ltd.—A dividend of 7 per cent. per annum on the ordinary shares, free of tax, has been declared. A balance of £13,565 is carried forward.

Oldham, Ashton and Hyde Tramways.—A dividend of 3½ per cent. has been declared on the ordinary shares, making 6 per cent. for the year. The rate has not varied for the past 13 years.

The London and Suburban Traction Company, Limited.—The directors of the London and Suburban Traction Company, Limited, have decided to recommend a dividend of 2½ per cent. on the preferencce shares for the year ended December 31st last. The annual general meeting will take place on June 5.

DICK, KERR & Co.,

Limited,

ABCHURCH YARD, CANNON STREET,

LONDON, E.C.,

ENGINEERS & CONTRACTORS.

Complete Equipment

TRAMWAYS & LIGHT RAILWAYS

at home and abroad

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash Apr. 18 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	66½	67
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4½	54/4½	54/4½
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4½	48/9	46/10½
4%	4%	Do. 4% Deb.	100	91	65½	65½
4½%	4½%	Do. 4½% Deb.	100	98½	67½	67½
5%	5%	Do. 5% Deb.	100	96	64	65½
—	—	Associated Omnibus Co., Ord. ..	5/-	3/8	1/2	1/2
1d.	1/-	Auckland Elec. Trams. Ord. ..	1	1 1/32	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	106	106
—	1/-	Bath Electric Trams Pref. Ord.	1	¼	3/6	3/6
6d.	6d.	Do. 5% Cum. Pref. ..	1	3/16	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
20/-*	28/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Do. 6% Cum. Pref. ..	10	11½	£9/18/-	£9/18/-
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	40	42
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	87	88
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5½	5½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91½	91½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	25½	25½
6%	5%	Do. Pref. Ord.	100	106	30½	31½
5%	5%	Do. 5% Cum. Pref. ..	100	103	52½	52½
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	83½	83½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	59½	59½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	30	30
6%	6%	Do. 6% Cum. Part. Pref.	100	—	72½	72½
5%	5%	Do. 5% Deb.	100	92	77	76
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	70	70
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	7	7
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	78/9	78/9
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1	1/4	13/3	12/3
1/3	1/3	City of B. A. Trams	5	5½	81/-	81/-
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	81½	81½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	59½	60
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 7/8	7 7/8
6/-	6/-	Do. 6% Pref.	10	12	10	9½
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/8	1/3	1/3
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1	1/8	10/3	10/3
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
1/1½	5½d.	Hong Kong Tramway	5/-	1/8	17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	⅛	2/4½	2/4½
6/6	9/6	Lanarkshire Trams Co. ..	10	10½	10 1/16	10 1/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79½
9½d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	1/4	1/6	1/6
6d.	6d.	Do. 5% Pref.	1	3/16	5/-	5/-
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	60	60½
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80	80½
5%	5%	Do. 5% Inc. Deb. ..	100	88½	76	76
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	33½	38½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	84½	84½
7½d.%*	9½d.*	Manaos Trams & Ltg. Ord. ..	1	3/16	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	70	70
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	73	74
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70½	70½
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	23½	23½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	34	34
—	—	Do. 6% Mt. Bds. ..	100	76	30	30
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	85½	88½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	1/16	16/3	17/-
9½d.*	9½d.*	New General Traction	1	⅛	7/3	7/3
8½d.	6d.	Northern Gen. Trans. Ord. ..	1	1/16	12/9½	12/9½
3/-	4/-	Para Elec. Rlys. Ord.	5	4½	75/-	75/-
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	7/1½	7/1½
—	—	Do. 7% Non. Cm. Part Pf.	1	—	13/10½	13/10½
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1	1/16	6/6	6/6
6d.	6d.	Do. 5% Pref.	1	1/16	11/10½	12/1½
8d.	1/4	Provincial Trams. Ord. ..	1	⅛	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	87	86½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	71½	71½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86½	86½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	72½	72
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	½	4/6½	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	92	92
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	77½	77½
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	32/6	32/6
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	69	69
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅛	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅛	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	72	72
—	—	Metropolitan Dist. Ord. ..	100	21½	13½	13½
—	—	Undgd. Elec. Rys. of London ..	10	21½	30/1½	30/-
		Do. "A"	1/-	⅛	4/6½	4/6
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	103½	103½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	100	100
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	76	76½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

Names.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C.	Apr. 9	604	764	+ 160	13	764	+ 160
Aberdeen Corporation ..	,, 10	1.845	2,265	+ 420	45	98,070	+ 13,494
Ayr Corporation ..	,, 13	321	367	+ 46	48	21,417	+ 3,095
Belfast City	,, 12	5,483	7,278	+ 1,795	2	15,405	+ 4,165
Birkenhead Corporation ..	,, 14	1,560	1,894	+ 334	2	3,897	+ 728
Birmingham Corporation	Mar. 23	16,427	20,749	+ 4,322	51	960,251	+ 147,035
do. Motor Omnibuses ..	,, 23	842	1,268	+ 426	51	55,449	+ 6,800
Blackburn Corporation ..	Feb. 6	960	1,571	+ 611	45½	67,531	+ 11,857
Bournemouth Corporation	April 17	2,018	2,539	+ 521	2½	6,979	+ 1,680
Bradford Corporation ..	,, 13	7,731	7,665	— 66	2	15,823	+ 1,492
Burnley Corporation ..	,, 13	1,793	2,014	+ 221	..	..	..
Burton-on-Trent Cor. ..	,, 14	273	361	+ 88	2	768	+ 220
Bury Corporation ..	,, 14	1,448	1,626	+ 178	2	3,409	— 21
Chatham & District ..	,, 11	1,230	1,168	— 62	15	16,790	+ 788
Cork Electric	,, 11	465	622	+ 157	15	8,526	+ 1,930
Derby Corporation ..	,, 13	1,078	1,278	+ 200	22	2,786	+ 586
Dundee City	,, 10	1,392	1,613	+ 221	47½	74,088	+ 9,140
East Ham Corporation ..	,, 13	1,338	1,290	— 48	1½	2,477	+ 216
Exeter Corporation ..	Mar. 22	302	373	+ 71	51	20,106	+ 801
Glasgow Corporation ..	Apr. 13	24,424	28,122	+ 3,698	45½	1,206,197	+ 159,126
Glossop (U.E. Sup. Co.) ..	,, 13	134	171	+ 37	15	2,697	+ 864
Halifax Corporation ..	Mar. 26	1,915	2,648	+ 733	51½	124,380	+ 13,918
do. Motor Buses ..	,, 26	48	57	+ 9	51½	2,551	+ 30
Hastings and District ..	,, 18	968	1,093	+ 125	11	10,521	+ 841
Huddersfield Corporation	Apr. 13	3,443	3,173	— 270	2	7,574	+ 549
Ilford U.D. Council ..	,, 13	685	899	+ 214	2	1,790	+ 588
Ipswich Corporation ..	,, 13	457	614	+ 157	2	1,291	+ 500
Isle of Thanet	,, 13	277	212	— 65	28	5,038	— 1,917
Kilmarnock Corporation ..	,, 13	181	239	+ 58	47½	9,977	+ 1,682
Lanarkshire	,, 11	2,690	3,547	+ 857	15	46,576	+ 11,314
Lancashire United	,, 10	3,011	2,537	— 474	15	37,496	+ 11,126
Leeds City	,, 13	10,850	10,713	— 137	2	22,343	+ 4,450
Leicester Corporation ..	,, 13	3,529	4,101	+ 572	..	..	..
Leyton U.D. Council ..	,, 11	1,799	1,858	+ 59	2	3,954	+ 566
Liverpool Corporation ..	,, 6	13,838	17,785	+ 3,897	13½	229,099	+ 37,043
Llandudno & Colwyn Bay	,, 5	189	537	+ 348	12	4,668	+ 1,319
London County Council ..	,, 17	49,020	55,362	+ 6,342	2½	137,696	+ 19,268
Maidstone Corporation ..	,, 11	226	262	+ 36	1½	640	+ 145
Manchester Corporation ..	,, 13	18,903	23,311	+ 4,408	2	45,644	+ 11,587
Nelson Corporation ..	,, 16	194	244	+ 50	50	11,869	+ 1,394
Newcastle-on-Tyne Cor. ..	,, 6	6,800	8,762	+ 1,962	1	8,762	+ 1,962
New St. Helens & Dist. ..	,, 10	1,564	1,350	— 214	41	57,097	+ 13,328
Northampton Cor.	,, 12	795	868	+ 73	2	1,646	+ 306
Nottingham Corporation ..	,, 11	4,103	4,948	+ 845	2	8,271	+ 1,692
Oldham Corporation	,, 14	2,602	2,973	+ 371	3	9,389	+ 1,479
Portsmouth Corporation ..	,, 10	2,035	2,581	+ 546	..	..	..
Reading Corporation	,, 11	869	1,161	+ 292	2	1,913	—
Rhondda Tramways	,, 4	1 351	2,461	+ 1,110	11	22,007	+ 4,542
Rotherham Corporation ..	,, 17	1,738	1,954	+ 216	23	5,223	+ 920
Sheffield Corporation ..	,, 14	11,468	12,717	+ 1,249	23	37,408	+ 5,891
Southampton Cor.	,, 10	1,788	2,364	+ 575	13	3,620	+ 981
Southend-on-Sea Cor. ..	,, 10	898	691	— 207	2	1,175	— 50
South Shields Cor. ..	Mar. 30	811	1,132	+ 321	52	50,874	+ 7,442
Sunderland Corporation ..	Apr. 14	1,618	1,982	+ 364	2	4,161	+ 865
Sunderland District ..	,, 3	643	1,175	+ 532	22	18,407	+ 4,707
Swindon Corporation ..	,, 10	251	298	+ 47	1½	443	+ 89
Torquay Tramways ..	,, 4	450	963	+ 514	14	9,374	+ 3,267
Tyneside Trys. & Trmrds.	Mar. 27	666	1,012	+ 346	13	10,416	+ 2,746
Wallasey Corporation ..	Apr. 13	1,346	1,511	+ 165	1½	3,816	+ 644
Walsall Corporation	,, 13	1,042	1,070	+ 28	2	2,360	+ 487
Walthamstow U.D. Coun.	,, 13	1,118	1,223	+ 105	2	2,451	+ 547
Warrington Corporation	Mar. 21	494	725	+ 231	51	31,239	+ 5,821
West Ham Corporation	Apr. 11	3,418	3,798	+ 380	1½	6,254	+ 649
Wigan Corporation ..	,, 11	2,081	2,170	+ 89	2	3,529	+ 570
Yorkshire (West Riding)	,, 14	2,300	2,278	— 22	15	35,883	+ 8,375

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Dublin United, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

Name.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Apr. 15	£56,123	£58,041	15	£820,536	+ £55,950
Auckland .. (28 days)	Oct. 26	21,423	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Jan. 27	3,521	3,771	44	36,742	+ 610
Brazilian Traction (Mlrs.)	Feb.	6,872,000	7,315,000	8	15,152,000	+ 1,014,000
Brisbane	Mar.	33,340	35,530	13	102,039	+ 5,879
British Columbia .. $	Feb.	451,679	501,150	34	3,984,379	+ 374,000
Buenos Aires Lacroze ..	Mar.	41,337	42,647	39	346,421	+ 69
Burmah Tram. & Light Rs.	Feb.	22,912	22,985	30	184,236	+ 217
Calcutta .. .. Rs.	Apr. 6	68,357	72,404	14	993,280	+ 47,718
Cape Town	Mar.	17,688	19,911	..	..	..
Carthagena and Herrerias	Mar.	2,955	5,316	13	13,358	+ 3,198
Cordoba	Feb.	11,896	12,972	47	147,938	+ 435
East India	Mar.	1,647	1,729	35	10,496	— 5,744
Hong Kong .. .. $	Feb. 16	12,514	18,149	7	94,318	+ 102
Kalgoorlie	Dec.	2,894	3,044	52	32,608	+ 1,176
La Plata	Mar.	4,523	5,347	13	4,803	+ 1,867
Lima	Feb.	34,228	41,913	8	85,449	+ 14,380
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Mar. 31	35,335	48,284	13	237,008	+ 33,569
Manaos .. .. Rs.	Jan.	146,493	151,871	..	..	..
Manila (8 weeks) .. $	Feb. 23	73,200	93,900	8	93,000	+ 19,800
Montevideo	Mar.	31,979	36,659	21	172,333	+ 14,941
Pernambuco	Apr. 14	3,650	4,490	15	69,496	+ 15,924
Peruvian .. .. $	Mar.	1,017,000	1,119,530	39	9,322,560	+ 1,020,168
Port Elizabeth	Mar	4,428	4,425	..	..	..
Rangoon	Mar.	6,226	5,955	13	16,978	+ 1,514
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Feb. 9	14,829	13,537	6	75,114	— 5,447
Toronto .. .. $	Feb.	932,567	981,933	8	2,050,252	+ 115,216
Winnipeg .. .. $	Feb.	280 717	298,899	8	633,541	+ 32 879

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Bradford Tramway Results.—At a meeting of the Bradford Corporation Tramways Committee on Monday, a statement of the results for the financial year was submitted. The statement, which shows a comparison with the preceding year, is as follows :—

	1917-18	1916-17.	Inc. or Dec.
Traffic receipts	£361,912	£322,634	£39,278+
Railless electric traction ..	12,249	10,706	1,543+
Miscellaneous	5,096	4,076	1,020+
Parcel Dept.	13,130	10,747	2,384+
Total	£392,388	£348,163	£44,225+
No. of days (days not worked 5)	360	364	—
Mileage run	5,905,356	6,086,770	181,414+
Average receipts P.C.M. ..	15·94d.	13·72d.	2·22d.+
Units consumed for traction..	12,399,514	12,286,390	112,924+
Average units per car mile ..	2·099	2·018	1·081+
Passengers carried	84,129,252	77,074,546	7,054,706+
Total wages paid	£190,530	£158,155	£32,375+
Included in—			
Total Bonus paid	53,514	22,087	31,427+
,, dependents' allowances	21,272	14,376	6,896+
,, sick pay	3,536	4,351	815—

The number of parcels carried was 598,902, as against 644,064, a decrease of 45,162.

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Mandalay Electric Tramways
Dover Corporation Tramways
Newcastle-on-Tyne Corporation Tramways
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Highways and Permanent Way Engineer, City of Leeds.

CONTENTS :

FOREWORD.
What's wrong with the Track ?"

CHAPTER I.—CONCRETE FOUNDATIONS.
Defects—Causes of fracture—Method of laying concrete.

CHAPTER II.—CONCRETE MATERIALS.
Road metal—Water-gravel—Sand—Clinker-sand—Trass.

CHAPTER III.—REPAIRS TO CONCRETE FOUNDATIONS.
Patching—Partial repairs—Complete renewal.

CHAPTER IV.—TRACK DESIGN.
"Follow my leader" policy—Importance of local conditions—Effect on sub-soil—Standard methods—Transverse sleeper tracks—Effect of vehicular traffic and tramway car traffic.

CHAPTER V.—RAIL PACKING.
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CHAPTER XIII.—RECONSTRUCTION
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CHAPTER XIV.—SURFACE DRAINAGE AND RAIL MAINTENANCE.
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CHAPTER XV.—SPECIAL TRACK WORK.
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THE

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

URBAN DISTRICT COUNCIL OF REDDITCH.

The Council invite tenders under a P4 Priority Certificate for:—

(a) One 2,000 KW. 3,000 K.V.A. Turbo-Alternator, three-phase 3,800 volts, 50 periods, complete with surface condensing plant.
(b) One Cooling Tower.
(c) Additional H.T. Switchgear to existing board.
(d) One new Water-Tube Boiler and accessories, and re-erecting existing boiler.

Firms desiring to tender may obtain copies of the specifications, plans and form of tender, on application at the offices of the Consulting Engineers, Messrs. Handcock, Dykes and Trotter, 11, Victoria Street, Westminister, S.W.1., on payment of a deposit of One Guinea in respect of each specification.

This deposit will be returned on receipt of a bona-fide tender. Tenders to be sent to G. W. Hobson, Esq., Clerk to the Redditch Urban District Council, on or before noon on Monday, May 13, endorsed on the outside, "Tender for Electrical Plant."

ISLINGTON BOROUGH COUNCIL.

The Lighting Committee of the Islington Borough Council invite Tenders for the supply and erection of Machinery and Plant, viz.:

(a) 5,000-KW. Steam Turbine, Alternator, Exciter, Condensing Plant, Switchgear, Piping, etc.
(b) Water-tube Boilers, Coal Conveyor, Telpher, Burners, Steam Piping, and other Accessories.

Specification, General Conditions, and Form of Tender may be obtained on application to the Electrical Engineer, 50, Eden Grove, Holloway, N.7, on or after April 29th, 1918. A deposit of £2 2s. will be required, which will be returned on receipt of a *bona-fide* Tender.

Tenders, under seal, and endorsed on the outside "Tender for Electric Lighting Plant," to be addressed to the undersigned, and delivered at the Town Hall, Upper Street, Islington, N.1, not later than noon, Friday, May 24th, 1918.

(By order) C. G. E. FLETCHER,
Town Clerk.

Town Hall, Upper Street, N.1.
April 12th, 1918.

PLYMOUTH CORPORATION.

The Plymouth Corporation are prepared to receive Tenders for the Supply of:—

(a) Turbo-Alternator.
(b) Converter.
(c) Transformers.
(d) Switchgear.

Specifications and Forms of Tender may be obtained from the undersigned. Applicants must state the Sections required, and make a deposit of £1, which will be returned after receipt of a *bona-fide* Tender. Tenders to be delivered by April 29, 1918.

Prince Rock, Plymouth, E. G. OKELL,
April 10, 1918. Borough Electrical Engineer.

URBAN DISTRICT COUNCIL OF HOYLAKE & WEST KIRBY.

The Electricity Committee of the above Council invite Tenders for—

Superheater for 30 ft. × 8 ft. Lancashire Boiler.

Particulars of pressure, etc., may be obtained from the Electrical Engineer, Electricity Works, Hoylake, Cheshire.

RODERICK WILLIAMS,
Council Offices, Hoylake. Clerk to the Council.
April 15th 1918.

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DEWSBURY CORPORATION.

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The Dewsbury Corporation Electricity Department require the services of a Shift Engineer to take charge of an 8-hour shift, 56 hours per week, in a combined lighting, power and traction station which is a Certified Undertaking. Wages at the rate of £3 10s. per week, including all bonuses to date, and a sliding scale of increases after according to length of service.

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RAWTENSTALL CORPORATION TRAMWAYS.

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Applications are invited for the position of Car Shed Superintendent. Applicants to have had all-round experience in the various trades concerned. Wages, including all bonuses, £195 per annum. Applications, with not more than two recent testimonials, to be delivered not later than Wednesday, the 1st. prox.

Bacup Road, Rawtenstall. C. L. E. STEWART,
23rd April, 1918. General Manager.

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CHARGE ENGINEER.

Charge Engineer wanted for combined A.C. and D.C. station.—Apply, stating experience, with copies of testimonials, and salary required, to BOROUGH ELECTRICAL ENGINEER, Electricity Works, Dover.

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AMBERLEY HOUSE, NORFOLK STREET, LONDON, W.C.

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SATURDAY, APRIL 27, 1918.

SUPPRESSION OF A DANGEROUS PRACTICE.

If there is one tramway bye-law more than another which is allowed to be disregarded, it is the regulation relating to expectoration. The evil has been accentuated since women and girls have formed the majority of conductors; yet, if the new conductors were more generally encouraged to caution offenders, they would become more energetic than the men in carrying out this portion of their duty. This contention is founded upon the enterprise and courage that a good many women have displayed in bringing about arrests for other offences. There is some excuse for laxity in the case of those responsible for omnibuses, for these vehicles do not possess the advantage of a bye-law granted by the Board of Trade, under which the maximum penalty is forty shillings. On public health grounds, besides the comfort of passengers generally, there are, however, good reasons why offenders on omnibuses should be remonstrated with. If the bye-law is to be consistently enforced on tramway-cars, the conductors should not always be left to cope with transgressors single-handed. At a time when military service has reduced the number of inspectors it is difficult to call for greater energy on their part; but there is another class of officials that might be called upon for assistance. We refer to the sanitary inspectors. In one Midland town these inspectors are entrusted with the work, as coming within the scope of their duties. When the first prosecution was instituted by one of them, the justices warmly commended the Sanitary Committee for so public-spirited a conception of their duty. Probably it would be necessary for a Tramway Committee to appeal to a Sanitary Committee for this example to be widely followed. Numerous reasons might be advanced for urging London Borough Councils to do likewise, rather than to rest content, as they are doing, with complaining to the County Council of the increased prevalence of the offence. Medical men agree that the practice is conducive to the spread of pulmonary consumption. To permit its continuance not only promotes infection with a disease that already works great havoc, but is undoing the work that the Borough Councils are accomplishing at local dispensaries. It also means increased expense to the ratepayers at a time when the hospital accommodation provided by the County Council is inadequate. Only this week the Chairman of the London Insurance Committee complained that there are several hundred consumptive ex-soldiers for whom hospital treatment is not available. Fortunately, the Highways Committee, who are responsible for the administration of the London County Council tramways, recognise their responsibility for the suppression of the spitting habit, and some time since they instructed the management to send out inspectors in ordinary clothes. The result is that two persons have been fined twenty shillings each at Greenwich, and another culprit fifteen shillings, at Woolwich. The Underground Railway authorities are also alive to their duty, as is shown by several prosecutions lately instituted, and on receiving a specific complaint they detail inspectors to the route named. The nuisance is at its height during early morning traffic, with the result that the top decks of cars assume a disgusting condition. Notices have lately been displayed asking people "Please do not spit," but something more effective is needed if an improvement is to be secured in the habits of those who enjoy the privilege of workmen's fares. These appeals are to be replaced by a list of convictions obtained in the police courts, and it is to be hoped that this course combined with the vigilance of conductors will effect a reform. Certainly traction authorities may rely upon receiving support from the magistrates.

STATUTORY TRAMWAY FARES.

SELECT COMMITTEE APPOINTED BY THE HOUSE OF COMMONS.

Sir Albert Stanley has lost no time in fulfilling the promise that he gave to the representatives of the tramway associations on April 4 to secure the appointment of a Select Committee of the House of Commons to consider the question of statutory fares. The necessity of passing the Man Power Bill at the earliest possible moment inevitably delayed the motion for the select committee longer than was at first expected, but on Wednesday night just before the rising of the House the motion was made and a committee consisting of the following was appointed :—

Captain Barrett.	Sir James Boyton.
Mr. Broughton.	Mr. Cochrane.
Sir Arthur Fell.	Mr. Nugent.
Sir William Pearce.	Mr. Rendall.
Mr. Toothill.	Mr. Watt.

The following report of the proceedings is reprinted in full from the official record :—

LORD E. TALBOT (Joint Parliamentary Secretary to the Treasury) : I beg to move, "That a Select Committee be appointed to consider and report whether it is expedient that some provision should be made for the temporary modification of statutory requirements with regard to the charges for the conveyance of traffic on Tramways and Light Railways constructed wholly or mainly on public roads, in the case of undertakings whose financial circumstances have been injuriously affected by causes arising out of the War; and, if so, on what terms and conditions, and whether by private Bill or by general legislation."

MR. BOOTH : Are we to have any more of these Committees ? I do not see how this is to be defended unless there is some idea of completing the process. Will there be a Committee appointed, for instance, to deal with electrical undertakings, or with any similar subject ? It seems to me that if there are to be any others we should be told now, and I would like to ask whether there is any intention to put any other Resolution on the Paper, because, in my opinion, they should be all taken together.

The PRESIDENT of the BOARD of TRADE (Sir A. Stanley) : I think there is a very particular reason why the terms of reference to the Committee appointed to deal with gas charges were not framed so as to include tramway charges. They are quite separate and distinct propositions. It had been represented to me for a considerable time that there is a real need for dealing immediately with the gas question, and that matter had to be decided before the tramway question was raised. This came up later, after I had received a deputation from representatives of a very considerable

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number of tramway undertakings in the country, both municipal and company, who put to me that owing to the enormous rise in wages and the very heavy increase of charges for material, they had a real case for asking for consideration with respect to the charges they were making to the public. I did not feel I could take upon myself the responsibility of determining the question, particularly in view of the fact that I had previously given an undertaking to this House that the Board of Trade would not deal with the question of increased tramway fares without first referring it to this House. It is because of that pledge that I ask this House to agree to the appointment of this Select Committee to investigate this question and determine whether or not there is ground for an increase in these tramway charges. As to whether there will be any need for dealing with other public utility undertakings later on, I am not prepared to say at this moment. I think we had better wait and see what recommendations are made both by the Committee on Gas and by this particular Committee. There is outstanding a question about the charges of electricity undertakings, and also with regard to water companies, but they are a very small number, and they can be dealt with later on. I think at the moment it would be better, and perhaps expedite matters, to limit the procedure to these two Committees at this particular moment.

The motion was then agreed to.

On the motion being made by Lord E. Talbot: "That Captain Barnett be a Member of the Committee,"

MR. BOOTH: I have no objection to this hon. Member, but I wish to point out that if a number of Committees are to be appointed it will mean that a large number of business men in this House will have their time occupied at great length in dealing with what is practically one problem, and I would suggest that if other Committees are set up it would be as well to reappoint the Committee now being elected, so that they may deal with all the remaining questions. It will save the time of hon. Members, because the issue involved in all these Committees is practically the same.

The motion was then agreed to, and the other members mentioned above were appointed.

The Committee have power to send for persons, papers, and records, and three members form a quorum.

L.C.C. TRAMWAY MATTERS.

The London County Council met for the first time after the Easter recess on Tuesday, when a number of reports were received from the Highways Committee, chiefly with reference to contracts.

INCREASE IN WAGES.

Decisions of the Conciliation Board granting applications for increased wages from various employees were approved, and these will entail an estimated cost of £18,400 for the remainder of the current financial year, and £18,900 for a full year. In view of the statement of the Committee on Production that it was intended that the provisions of the award of that Committee of March 8 to tramway and motor omnibus workers relating to women should be applied in the case of the women employees of the Council's tramway undertaking, the view of the Committee is that the war wages of these women of 18 years and over who have received the same war advances as male employees should be increased to the same extent as those of the men, and that those women who are receiving less should be paid an advance of 4s. a week, a further advance to be paid to women of the latter class when they have completed twelve months' service. The Highways Committee reported that they were acting on this ruling as applied to the agreement, and that as a result about 67 per cent. of the women would receive an immediate advance to £1 a week.

SPECIAL TEMPORARY ALLOWANCE TO TECHNICAL STAFF.

The Highways Committee proposed that a special temporary allowance of £50 each for the period ended December 31st, 1918, should be made to each of the persons to be appointed to fill existing vacancies in the electrical branch of the tramways department for two sub-station repair inspectors and two mains inspectors, each at a commencing salary of £200 a year, rising to £250 a year.

SPECIAL SUB-COMMITTEE.

The Highways Committee reported that they had re-appointed and re-constituted the Special Sub-Committee on Tramways Operation as follows:—Messrs. W. H. P. Gibson, G. M. Gillett, H. H. Gordon, F. C. Harrison, D. Hazel, T. F. Hobson, Henry Marks, Lieut.-Colonel E. W. Morrison-Bell and Mr. W. J. Squires, together with the *ex-officio* members.

CLAIMS.

The Highways Committee also reported that they had settled 940 claims in respect of accidents in connection with the tramways, the total amount being about £9,186. In sixteen other cases actions were brought against the Council. In six of these a verdict was given against the Council and sums amounting to £310 13s. 4d. and costs had to be paid. Seven actions resulted in the Council's favour and three were withdrawn. Claims made by the Council for damage to tramway property amounting to £496 12s. 10d. had been settled.

SPITTING ON TRAMWAY CARS.

The Committee further reported that they had approved the exhibition on tramway cars of notices relating to spitting, and that arrangements had been made for inspectors in private clothes to be placed on special duty periodically with a view to the detection of offenders against the by-laws relating to spitting on tramway cars, with the object of proceedings being taken in suitable cases. Records of any convictions would be displayed on the cars and the matter would be dealt with in future advertisements relating to the tramway cars.

TRAMWAYS CONCILIATION BOARDS.

Mr J. R. A. Moore, a principal assistant in the department of the Clerk of the Council, has been appointed to act as secretary of the Council's representatives on the conciliation boards during the absence on war service of Captain H. M. Hooke.

DELEGATES TO CONFERENCES.

The General Purposes Committee reported that in accordance with the general policy of the Council they had replied in the negative to an inquiry by the Chief Industrial Commissioner whether the Council would become a party to a conference on the question of a general application as to war wages made by the National Transport Workers' Federation on behalf of employees of passenger traffic concerns.

On the understanding that the Council was thereby in no way committed as to its policy, the General Purposes Committee approved of the attendance of the chairman and vice-chairman of the Highways Committee and the general manager of the tramways department at a conference convened by the Municipal Tramways Association to consider questions of wages, bonuses, etc.

CONCESSIONS TO CONTRACTORS.

The Stores and Contracts Committee reported that they had continued their policy in dealing with contracts for stores the supply of which had been affected by the war through circumstances which could not be foreseen, and had allowed contractors to charge increased prices on the condition that the firms would revert to the contract prices when called upon to do so.

The Highways Committee reported that they had sanctioned the purchase of articles required for tramway maintenance purposes, and the execution of small works and repairs, at an estimated cost of £64,410, and that they had authorised the sale of six double-deck cars to Southampton Corporation tramways at £550 each.

About 25,225 tons of coal and 773 tons of coke for Greenwich power station were purchased at a cost of about £46,000 during the quarter ended March 31, 1918.

The London Electric Supply Corporation, Ltd., has been allowed to increase by 10 per cent. the charge for the supply of electrical energy for tramway purposes.

During the Easter recess, as a matter of urgency, tenders were invited from selected firms for the supply of rolled steel brass.

TRAMWAY ADVERTISEMENTS IN NEWSPAPERS.—INCREASED EXPENSES.

Mr. G. H. Hume, chairman of the Highways Committee, in reply to a question, said that the object of tramway advertisements in the newspapers was to give the public information respecting the services as the heavy burdens now placed on the undertaking were of the closest concern to all who use the tramways. The Conciliation Board agreement involved an additional expenditure of £113,000 a year. The special committee, known as the Tramways Operation Sub-Committee, was appointed in January 1917, its reference being to consider and report whether, and if so what, alterations should be made in connection with the tramway operations, with particular reference to services and methods of fare collection. The work of this committee had already resulted in the Council agreeing to several proposals for fare revision necessitated by increased working costs.

GOVERNMENT RESTRICTION OF SERVICES.

The following letter, signed by the Secretary, and dated April 30, has been sent by the Tramways (Board of Trade) Committee, to tramway authorities:—

COAL RESTRICTION ORDER.

The Tramways (Board of Trade) Committee have been instructed by the President of the Board of Trade to notify all tramway undertakings which supply or purchase electrical energy for tramways (within the area affected by the Order No. 366, 1918, to reduce the supply of gas and electricity by one-sixth) that they must reduce their coal consumption at once by at least 15 per cent.

In giving effect to this instruction arrangements should be made so as to secure that the transport of persons engaged on work of National importance should be interfered with as little as possible.

The following examples of means of economising coal are suggested:—

(1) Reduction of services not required in the National interest.

(2) Withdrawal of services either for a part or the whole day on Sundays.

(3) Stopping all services at an earlier hour in the evening.

(4) Partial substitution of coke, locally produced, for the coal at present consumed.

(5) Grant of a bonus to motormen for economy in power consumption.

There are probably other means of economising fuel and my Committee invite you to submit suggestions in this regard, which may be of value to other tramway undertakings.

My Committee will be glad if you will give this matter your immediate attention and be good enough to forward full particulars of the manner in which it is proposed to deal with the situation.

The date at which the saving should be instituted must be as early as possible and not later than May 1, 1918.

You are requested to furnish to the Committee as soon as possible the following information for each week of the year from

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April 1, 1917, to March 31, 1918, and similar information for each succeeding week from the 1st inst.

(1) Number of car miles run during week.
(2) Total coal consumed during week.
(3) Number of units generated during week.
(4) Coal consumed per unit generated (stating A.C. or D.C.)
(5) Average calorific value of coal B.T.U.
(6) The district from which coal is obtained.

My committee also desire to have this information weekly in future, for which purpose suitable forms will be supplied you in due course.

REDUCTION IN TRAMWAY SERVICES.

The tramway service at Plymouth is now stopped at 10 o'clock. with the object of economising coal.

Northampton Corporation Tramways Committee have decided to cease running tramway-cars on Sundays, and also to stop them half an hour earlier on weekdays.

Halifax Tramways Committee have appointed a sub-committee to consider the question of a further curtailment of the tramway services owing to the labour shortage and kindred difficulties.

Owing to diminished coal supply, the Cork Electric Tramway Company announced a daily reduction in the car services, except on Saturdays and Sundays, which took effect on April 15.

As mentioned in our last issue, Birmingham cars are now timed to leave the central termini at 11 o'clock instead of 11.30. As regards possible further reductions, Mr. Harrison Barrow, Chairman of the Tramways Committee, recently said that at the present time the cars were terribly crowded, and as Birmingham was a munition area he thought that the services would be safe from further interference.

A census has recently been taken of Glasgow tramway traffic during the late evening hours, and a report is expected shortly indicating what curtailment in the services is regarded as desirable. The census shows that the number travelling on certain routes after 10.30 is so small that a diminution in the service would not seriously inconvenience the public. In any case, steps will have to be taken to economise energy.

Belfast Tramways Committee, acting on the advice of the general manager, have decided to recommend the Council:—(1) To stop all services an hour earlier at night. (2) To fix a twenty minutes' service on week days on the following routes:—Castlereagh Road, Ravenhill Road, Donegall Road, Bloomfield Road, Belmont (from Belmont Church Road to terminus) and Glengormley (from Gray's Lane to terminus). (3) To suspend services on the following routes on Sundays entirely:—Springfield Road, Oldpark Road, Stranmillis Road, Bloomfield Road, Castlereagh Road, and Ravenhill Road. The present weekly car mileage in Belfast is 119,700 and the proposal will effect a reduction of 13,000 miles.

Mr. G. H. Hume, Chairman of the Highways Committee of the London County Council, recently stated that it was impossible to say anything definite in regard to the reduction that would have to be effected in the London tramway service. They were being called upon by the Coal Controller to reduce coal consumption by a definite percentage. This could only be done by effecting economies which of course could only be very limited, or by the reduction of services. It is not anticipated that the all-night services will be touched. These cars run only half-hourly and to interfere with them further would inconvenience night workers in London, and would produce very little effect in consumption of coal.

UNDERGROUND TRAFFIC ALTERATIONS.

In order to economise as much as possible in the use of light and power, a number of reductions in the train services on the Underground Railways will shortly take place during the slack business hours and after 11 p.m. at night. In addition, commencing on May 1st, the following stations will be closed after 11.30 p.m. at night.

DISTRICT RAILWAY.—Stepney Green St. Mary's (Whitechapel) (after last train to New Cross) Cannon Street, West Brompton, Ravenscourt Park, South Acton, Boston Manor, Hounslow Town, Sudbury Town, Sudbury Hill, North Ealing.

BAKERLOO LINE.—Regent's Park, Lambeth (North), Maida Vale.

PICCADILLY LINE.—Gillespie Road, York Road, Covent Garden, Down Street, Brompton Road.

HAMPSTEAD LINE.—South Kentish Town, Mornington Crescent, Goodge Street, Strand (Charing Cross Underground Station is within two minutes).

CENTRAL LONDON.—Chancery Lane, Lancaster Gate, Holland Park.

For the present the times of the first and last trains to stations other than those above mentioned, will be as usual.

On Sundays, commencing May 5th, the following stations will be closed all day:—

DISTRICT RAILWAY.—Cannon Street, West Brompton, North Ealing, Ravenscourt Park; Temple Station will be closed after 4 p.m.

PICCADILLY RAILWAY.—York Road, Down Street.

HAMPSTEAD LINE.—Goodge Street, Mornington Crescent.

CENTRAL LONDON RAILWAY.—Post Office (after 4 p.m.).

CITY AND SOUTH LONDON RAILWAY.—Clapham Road will *not* be opened before 4 p.m.

An Improvement at Leeds.—New arrangements came into force on the Leeds tramways on Monday which have effected considerable improvements in the service. For the first time cars ran from the City Square to Briggate through Boar Lane without stopping. For years the crowding at the corner of Boar Lane and Briggate has been a source of danger. This crowding has now been done away with, and the difficulties of the bottle neck at Boar Lane have been effectively reduced

INCREASES IN FARES.

Doncaster Corporation have decided to increase the fares on the Warmsworth route from 2½d. to 3d., and on the Brodsworth route from 3d. to 4d.

As mentioned in a previous issue, a revision of fares is being made by the Dundee Corporation tramways. Halfpenny fares will be abolished and the fare on the long distance routes will be increased from 1d. to 1½d.

The increase in fares on Nottingham Corporation tramways appear not to have made any difference in the habits of the public. The receipts from fares are fully up to the normal standard and the Tramways Committee are so far satisfied with the results.

The Yorkshire (West Riding) Electric Tramways Company on April 22 made a general increase in fares. The stages remain the same, but the minimum fare is increased from 1d. to 1½d., and other fares by ½d. Workmen's and children's fares will be half the ordinary fares, with a minimum of 1d.

Glasgow Town Council has accepted the recommendation of the Tramways Sub-Committee on Finance that the resolution to delay further action in regard to the financial position of the tramways department until the end of the present year be rescinded, and that in view of the changed circumstances the Sub-Committee should forthwith consider and report upon the matter.

A special sub-committee of the Birmingham Tramways Committee have decided to put into operation on Sunday next, April 28, a new scale of fares sanctioned by the City Council at their last meeting. The new fares lists are being placed in the cars. The new scheme involves the curtailment of all penny stages from the centre of the city and an increase of one halfpenny in all other stages. The halfpenny fares for children will be withdrawn, but children over the age of 3 and under 14 years of age will be carried at half fares, the minimum fare being one penny.

The Tramways Committee of the Pontypridd Council has considered the report of the Engineer and Manager, Mr. J. E. Teasdel, on the increased cost of working the tramways. In view of the heavy increases in the wages and materials account, and also the need for a further outlay on the undertaking to keep it in a state of efficiency, it was decided to increase all ordinary fares by ½d., leaving to a sub-committee the power to fix short stages for which penny fares will be charged. It was also decided to increase the workmen's ½d. fares to 1d., 1d. fares to 1½d., and the 1½d. fares to 2d., but which are to include through fares.

Recent arbitration awards to employees of the London County Council will entail a total cost of about £113,000 a year. At the meeting of the Council on Tuesday last it was stated that a sub-committee is to inquire into the steps that it will be necessary to take to meet the increased expenditure. All parties in the Council are agreed that at the present time it will be unfair to allow any burden to fall on the ratepayers in connection with the tramways, and it is consequently necessary that considerable increases in fares should be made. Not only the ordinary fares but workmen's fares will undoubtedly have to be raised. Thanks largely to the conciliatory influence of Mr. G. H. Hume, chairman of the Highways Committee, tramway policy is much less dominated by party politics than hitherto, and it may be hoped that whatever changes are found to be necessary will be approved by all sections of the Council.

Considerable changes are to be made in the fares and stages on the Manchester Corporation tramways, and a sub-committee has been appointed to prepare an amended scale of fares. The proposals include:—

Abolition of halfpenny stages on all routes; minimum fare one penny.

Workpeople's fares to be abolished; all passengers to pay the ordinary fares.

Children's fares to remain as at present—half fares up to 14 years of age.

Regarding ordinary fares and stages, new scale on basis of approximately 2 miles for first penny from centre of city; corresponding increase as regards 1½d. and 2d. and higher fares and stages.

MISCELLANEOUS NEWS AND NOTES.

Summer Coats for Women Conductors.—Arrangements have been made for the purchase of summer coats for women conductors on the London Council's tramways.

A Keighley Extension.—The Corporation of Keighley propose to apply for a further extension of time for the completion of authorised tramways to Stockbridge.

Ashton-under-Lyne Town Council propose to serve a notice upon the Oldham, Ashton and Hyde Electric Tramways Company, requiring the latter to sell to the Corporation that part of the undertaking which is within the borough.

Women as Tractor Drivers.—The Food Production Department on April 12 issued an appeal for 300 more women to learn tractor driving. Numbers of soldiers of low category have been transferred to agricultural work and are being trained for tractor driving.

Nottingham and Transport Facilities.—It is reported from Nottingham that steps are being taken by traders there to organise a scheme for facilitating and economising in the transport of goods. It is hoped to establish a community of interest between all trades concerned in the transport and delivery of goods in the city and surrounding country, so that men, horses and mechanical power may be efficiently and economically employed. A tramway parcel service is being considered by the Tramways Committee.

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Motor Omnibuses replace Railway Service.—The Llandudno branch of the London and North Western Railway having been closed on Sundays, the train service is being replaced by a service of motor omnibuses running from Llandudno Junction to Llandudno.

Petroleum in Italy.—The production, import, distribution and consumption of petroleum in Italy having now been brought under State control, the amount available after Government requirements are satisfied is to be reserved exclusively for agricultural and lighting purposes.

Motor Vehicles after the War.—Dr. Addison, the Minister of Reconstruction, has expressed the hope that vehicles now used for war purposes might after the war be of service in solving the transport problem, and the Prime Minister recently stated that thousands of motor lorries would be in the hands of the Government for use for this purpose.

Edinburgh Corporation Tramway Managership.—The Tramway Committee of Edinburgh having decided, in view of the taking over of the tramways by the Corporation, that it is desirable to appoint a manager, a sub-committee have now put forward a proposal that the salary to be attached to the office should be about £1,000 per annum.

The Institution of Automobile Engineers.—The eighth ordinary general meeting of the Institution of Automobile Engineers will be held at the Royal Society of Arts, John Street, Adelphi, W.C., on Wednesday, May 8th, 1918, at 7.30, when Mr. J. B. Hoblyn will read a paper entitled "Commercial Steels and their Heat Treatment." Cards of invitation can be obtained on application to the Secretary of the Institution of Automobile Engineers, 28, Victoria Street, S.W.1.

Overturned Car at Brentford.—A car of the London United Tramways Company was overturned in High Street, Brentford, near the gas works on Sunday, April 21. The weather was very wet at the time, and all the passengers were inside. After leaving the rails the car ran on to the footpath and, colliding with a standard, fell over on its side. Eleven passengers were somewhat injured, but after being attended by a doctor they proceeded to their own homes.

Assault on a Woman Conductor.—At the Guildhall, London, Alderman Sir Edward Cooper, in passing sentence upon a man charged with assaulting a woman omnibus conductor in the service of the London General Omnibus Company by kicking her when she prevented him from getting on to an omnibus which was already full, said that these young women were doing good service to the State, and must be protected. He inflicted a fine of £5, with the alternative of twenty-one days' imprisonment.

Women Drivers at Portsmouth.—The Portsmouth Tramways Committee have decided "to make an experiment" in the employment of women drivers. The general manager has selected half a dozen women conductors, who have passed the medical test as to general health and wrist power, and will be trained as drivers. It is anticipated that when these women have completed their training and shown their adaptability, a large number will be employed, as it is expected that the new demand on man power will reduce the number of male drivers.

Accident to Birmingham Car.—On Saturday of last week a Birmingham tramway car while travelling down James Watt Street got beyond control, the brakes failing to act. The car, which was full of passengers, left the rails just beyond the junction of Stafford Street and Coleshill Street, ran across the roadway and on to the footpath, where, after crashing through some railings and breaking up the flagstones, it came to a stop, the wheels sinking into the soil. No passenger complained of injury, but both the driver and woman conductor were taken to the hospital suffering from shock.

Further Demands of Tramway Employees.—Representatives of municipal tramways met at the Surveyors' Institution in London on Thursday to consider the application that will shortly be made by the tramway employees throughout the country for a 12½ per cent. bonus. The meeting was private. The arbitration which was agreed upon some time ago by the authorities of the Lancashire tramways and of the employees' union has not been held, and apparently it is intended that no action should be taken until a national demand is made. The situation is a difficult one, and is not made easier by the fact that at least one Corporation has already granted an increase of 12½ per cent. to its employees.

Obstreperous Passengers at Norwich.—The drivers and conductors of the Norwich tramway cars have their troubles. At the local Police Court on April 19 a passenger was fined for assaulting a driver. The former had wanted to get out at the wrong end of the car, and on being told by the driver to go the other way be struck the driver with a stick. Another passenger was fined for smoking a cigar in a car, and refusing to put it out when requested by the conductor. The fines in each case included additional imposts for the use of objectionable language.

Metropolitan Association of Electric Tramways Managers.—A meeting of the members of this Association was held at the Municipal and County Club, Whitehall Court, Whitehall, S.W., on Friday, the 19th inst., when there were present:—Messrs. W. C. Ullman (East Ham) Chairman; W. E. Hammond (Met. Electric) Vice-Chairman; Slattery (West Ham); F. Schofield (Leyton), W. Murray (Walthamstow), A. V. Mason (South Metropolitan), L. E. Harvey (Ilford), W. Mackinnon (London United), R. Birkett (Southend-on-Sea), and T. B. Goodyer (Croydon), hon secretary. Letters of regret at their inability to be present were received from Messrs. Bruce (L.C.C.), Williams (Erith), and Stokes (Bexleyheath). Various matters of interest were discussed.

Condition of German Railways.—A telegram from a Reuter's correspondent at Amsterdam states that in the course of a discussion on railway questions in the Reichstag on Wednesday, the Progressive Deputy, Herr Mueller (Meiningen), remarked:—"Judging from the state of things on our railways and the condition of the rolling stock we are approaching a sort of bankruptcy of communications." In response to a protest, the speaker subsequently endeavoured to make out that he used the words in an "international" sense, in view of the general disorganisation of traffic.

Strike at Bristol.—A strike which caused much public inconvenience occurred at Bristol on April 23. In the morning cars did not run on the Bedminster and Ashton Gate route, and in the afternoon the service on other lines was partially suspended. It appears that the employees refused to take out their cars unless a non-unionist was discharged. The demand was not granted, and apparently no warning was given to the company either by the employees or their union officials that a strike was to take place. The company were able to keep a small number of cars running for the benefit of munition workers, many of whom have to travel long distances. The men resumed work on Friday pending negotiations between the Transport Workers Federation and the Tramway Company.

Permanent Way at Leicester.—Mr. E. G. Mawbey, borough engineer and surveyor, in his annual report to the Leicester Tramways Committee on the permanent way says that it is in good running order, although on portions of the track where traffic is heaviest the rails show considerable wear after being in full use for over fourteen years, and it is evident that renewals will have to be made in the very near future. Rail grinding to remove corrugations has been carried out during about six months of the year. The total length ground amounted to 34,748 yards, the cost being £184 15s. 10d., an average of 1·305d. per yard. The track has been improved by the insertion of a number of anchors, both joint and intermediate.

Traffic Difficulties at Cardiff.—At a meeting of the Cardiff Tramway Committee, Mr. Arthur Ellis, the general manager, said that as the ordinary users of the cars would pay no attention to the appeals made by bills on the car windows not to travel unnecessarily in the hours when business people wanted to get home, there would be no alternative but to exclude them from the cars. The cars would be reserved for people producing authority showing that they were on work essential to the national interests. He referred particularly to the use of the cars by ladies who persisted in coming to town to do shopping and remaining until their busy hours. They had only a limited number of cars, and it was with the utmost difficulty that they could keep 80 cars running, although they could find use for 250 cars. He suggested that ladies should do their shopping between 10 and 12, and 3 and 4 o'clock. The manager was given authority to curtail the services if he thought necessary.

National Electricity Supply.—Mr. Ernest Hatton, engineer and general manager of Newcastle tramway and electricity undertakings, has presented a searching report to the Parliamentary Committee of Newcastle Corporation on the policy and financial aspect of the proposed national electricity supply set out in the report of the Coal Conservation Sub-committee. The latter report, it will be remembered, proposes a national electricity supply for power purposes to be provided from 16 great power stations throughout the country. The scheme would involve the supersession of most of the existing electricity stations. Mr. Hatton's report consists of a detailed criticism of various points in the Coal Conservation Committee's report. Generally, he is not in favour of the national scheme, and he supports rather a development of existing undertakings. He quotes figures to show that on a basis of such a low selling price per unit as that indicated for the national scheme there could be no financial success. The conclusion is the municipalities should see to it that their interests and free expansion are properly safeguarded. The matter will clearly have to be further elucidated, and the Board of Trade Committee now considering it must be trusted to provide more illumination. But, however it may be worked out, the bed-rock fact remains that coal and money are being wasted to an enormous extent in hundreds of small electric stations all over the country.

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PERSONAL.

Mr. L. G. Byng, a director of the General Electric Company, Ltd., and the son of the late Mr. G. Byng, chairman of that company, has been awarded the Military Cross for distinguished service on the Western Front.

Mr. W. Claude Johnson has been appointed chairman of the directors of Messrs. Johnson and Phillips in succession to the late Mr. R. W. Blackwell. Mr. Johnson was one of the founders of the business of Messrs. Johnson and Phillips.

Mr. R. Stewart Bain, managing director, and **Mr. G. W. Partridge,** engineer and manager of the London Electric Supply Corporation, have completed thirty years' service with the company. **Mr. H. C. Carter,** secretary of the company, has retired after twenty-nine years' service owing to ill-health.

Motorman Hatchert, of the Southampton Corporation tramways department, is now reported to be a prisoner of war in Germany. **Conductor Burton,** another Southampton employee, who went abroad with the original Expeditionary Force and was in the retreat from Mons, has been discharged from the Army.

Mr. William Clough, general manager of Bury Corporation tramways who has for some time been assisting the Shipyard Labour Department of the Admiralty, is to be transferred to the Tramways (Board of Trade) Committee. The latter has written to the Bury Tramways Committee making the request, and it was agreed to on the understanding that the proposed transference will enable Mr. Clough to devote more time to his duties at Bury than has been possible since he has been acting for the Shipyard Labour Department.

Inspector Goodchild, of the Dover Corporation tramways, has resigned after twenty years' service and proposes to join the Army and Navy Canteen Board in connection with the Motor Transport Service. Mr. Goodchild has been presented with a gold watch subscribed for by the whole of the staff and others. Mr. Bond, the general manager, in making the presentation, said that during the whole time Mr. Goodchild had been associated with the service he had carried out his duties faithfully and loyally and they greatly regretted his departure.

The many friends of **Lieut.-Col. Hurlbatt** will regret to learn that he was killed in action on March 25. For some years before the war Mr. Hurlbatt, as he then was, had charge of Messrs. Dick, Kerr and Co.'s interests in Manchester, and his charming personality gained for him a wide circle of friends and acquaintances. At the outbreak of the war he obtained a commission as 2nd Lieutenant in the Manchester Regiment, and by his meritorious service had reached the rank of Lieut.-Colonel in the same regiment at the time of his death.

FINANCIAL REPORTS AND MEETINGS.

Greenock and Port Glasgow Tramways Co.—Including £3,201 brought forward, the accounts for the year ended Dec. 31 show a net profit of £19,977. The directors recommend a dividend of 8 per cent., same as for the previous year. It is proposed to place £3,500 to reserve, carrying forward £2,000.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended April 24 amounted to £54,235, an increase of £3,299, as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to April 24 (three and a half weeks) the total receipts were £191,893, an increase of £22,529 on the corresponding period of 1917.

Metropolitan Electric Tramways.—The report for the year 1917, shows that the revenue amounted to £594,085. After adding the balance brought forward from 1916 and deducting all expenses chargeable to revenue, including a provision of £22,687 for future reconstruction and renewals, there remains an available balance of £22,910, which the directors recommend should be appropriated as shown in the account, viz., to be placed to reserve account, £9,874; to dividend on preference shares at the rate of 2 per cent. for the year, £10,000; to be carried forward, £3,036. The traffic receipts amounted to £542,531 and show an increase of £38,192. Early last year the fares on the whole system were increased, but the revised scale would not become operative until the beginning of February. The directors state that further increases will have to be made if the company is to be in a position to meet the continual increase in the working expenses. Owing to a decrease in the net revenue the directors were unable to declare an interim dividend on the preference shares and the result of the year's operations permit of the payment of only 2 per cent. on the preference capital.

London United Tramways.—The report for the year ended December 31, 1917, states that the gross receipts amounted to £354,472, an increase of £18,137 as compared with 1916, but owing to the advance in the cost of material and labour the expenses have further increased by £23,595. After deducting the adverse balance of £2,538 brought forward from 1916 and all expenses there is a balance of £60,028, which is required for carrying out repairs and renewals whenever it becomes practicable. Charges for interest on first mortgage debenture stock and loans amount to £71,626. As a result of the proceedings referred to in the last report, Mr. F. S. Price, of Messrs. Price, Waterhouse and Co., was on June 5 last appointed by the Court to act as receiver of the company's undertaking and the net receipts thereof. Since that date negotiations have been carried on by the directors, with a committee appointed by the 4 per cent. first mortgage debenture stockholders, with a view to the reconstruction of the company's capital and rehabilitation of the tramways undertaking. These negotiations have resulted in a provisional arrangement under the term of which, subject to the Bill now before Parliament passing, both the loan and share capital will be substantially reduced and funds will be provided for the reconstruction and renewal of the tramways. Full particulars will be given to the shareholders as soon as possible.

Leicester Corporation Tramways.—In his report for the year ended December 31, 1917, Mr. A. F. Lucas, manager and secretary of Leicester Corporation tramways, says that during the year there was an increase in passenger receipts of £15,680, owing to the exceptionally good trade in the town and increased fares. On the other hand the working expenses had increased by £19,629, due to increased cost of power supply, war bonuses to employees and the higher price of materials. The gross profit amounted to £71,065, as compared with £63,316 in the previous year. After deducting interest sinking fund, income tax, and war allowances to employees, there is a net credit balance of £9,320. Mr. T. Robert Smith, electrical engineer and manager, writes that the increased price of fuel and increased wages have had an adverse influence on the generating costs. The average cost per unit was ·7820d. A comparison of the results for the past five years is appended :—

	1917.	1916.	1915.	1914.	1913.
Traffic revenue	£ 191,636	£175,956	£159,678	£149,664	£147,458
Other revenue..	52,012	40,315	28,842	20,571	17,059
Total	£243,648	£216,271	£188,520	£170,235	£164,517
Working expenses	172,583	152,954	122,142	118,607	110,115
	£71,065	£63,317	£66,378	£51,628	£54,402
Add Bank Interest	—	157	355	—	416
Reserve fund interest.. ..	—	—	—	1,660	3,346
Gross balance	£71,065	£63,474	£66,733	£53,288	£58,164
Interest on mortgages, etc. ..	£26,028	£25,298	£26,229	£24,010	£23,541
Redemption of debt	16,573	16,574	16,647	13,765	12,453
Income tax	7,337	7,401	4,484	2,801	2,122
Bank interest	540	—	—	207	—
War allowance reservists, etc.	11,266	12,044	7,412	1,284	—
Net balance	9,321	2,157	11,961	11,221	20,048
	£71,065	£63,474	£66,733	£53,288	£58,164

From statistics given in the reports the following items have been extracted :—

	1917.	1916.	1915.	1914.	1913.
Units per car mile.. .. .	1·95	1·96	1·97	1·82	1·771
Power cost per car-mile	3·203d.	2·574d.	1·927d.	1·480d.	1·431d.
Traffic receipts per track mile ..	£5,043	£4,630	£4,202	£4,045	£3,985.
Traffic receipts per car-mile ..	12·025d.	10·279d.	9·827d.	8·682d.	8·758d.
Expenses per car-mile	10·830d.	8·935d.	7·516d.	6·880d.	6·560d
Ratio of expenses to revenue ..	70%	71%	65%	69%	66%
Total track mileage	38	38	38	38	38
Number of cars in stock ..	160	160	160	160	150

CONTRACTS AND ORDERS.

Heywood Town Council propose to purchase a motor fire engine.

The Manchester Corporation Motor Ambulance Sub-Committee are purchasing a second-hand six-cylinder motor car for use as an ambulance.

Derby Electricity Committee have accepted the following tenders: British Thomson-Houston Co., Ltd., switchgear, £2,924; Chain Belt Engineering Co., ash elevator and crusher, £950; Babcock and Wilcox, induced draft fan, etc., £805; W. Abell, penstock, £320.

London County Council Contracts.—At the meeting of the London County Council on Tuesday, it was reported that the following orders had been placed :—

MESSRS. R. CORT & CO., two cutting coke machines at a cost of about £200 each the cost of the erection thereof being about £150.

J. HOPKINSON & CO., LTD., two parallel slide blow-off valves for boilers at £24 7s. 6d.

BABCOCK & WILCOX, LTD., 32,720 stoker links for chain grates of boilers at £735.

WILLANS & ROBINSON, LTD., the blading of two turbine generators at a cost of £25 2s. 2d.

WALTER SCOTT, LTD., for the supply of 175 tons of track rails at an extra cost over their contract price, and for any further quantity at the same price up to 825 tons, making 1,000 tons in all, which the Council may decide and be permitted to order before March 31, 1919. Deliveries are to be made in accordance with the terms of the contract except as regards price and time of delivery, and to be accepted *pro tanto* in fulfilment of the contract, the placing of an order for 175 tons or any further quantity not to be construed as an order to commence the delivery of the 3,200 tons referred to in the contract of April 14, 1915.

FRODINGHAM IRON AND STEEL CO., LTD., for 620 tons of conductor tee rails at £18 15s. a ton.

H. BESSEMER & CO., LTD., and CAMMELL LAIRD & CO., LTD., each for the supply of 2,250 driving wheel tires at £3 11s. 9d. each, and 1,500 pony wheel tires at £3 2s. 9d. each.

WESTERN ELECTRIC CO. LTD., re-sheathing 3,500 yards of cable at actual cost, plus 10 per cent.

PEASE & PARTNERS, LTD., for 500 tons of brake shoes for tramway cars, at £13 15s. a ton, during the six months ending June 30, 1918. The total expenditure will amount approximately to £6,875.

MIDLAND ELECTRIC WIRE CO., and the British Insulated and Helsby Cables, Ltd., for the supply of cotton-covered copper wire, at £2,515 and £4,436 respectively.

ARMSTRONG, STEVENS & CO., LTD.—Order for the supply of 330 rocker levers at 12s. was extended to include 370 additional rocker levers at 16s. each.

The following expenditure for re-winding armatures for electric tramway cars was approved :—P. R. Jackson & Co., £166 5s.; H. Dunn & Son, £359 10s.; the Electrical Repair Co., Ltd., £393 10s.; Burdette & Co., £807 13s. 6d.; Collins Electrical Co., Ltd., £323 10s.

The tender of the British Electric Transformer Co., Ltd., was accepted for the supply of a set of reactance coils for one of the transformers supplied to Woolwich Arsenal sub-station in connection with the supply of power from Greenwich power station.

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

DIVIDENDS PREV.	DIVIDENDS LAST.	NAME.	PAID.	PRICE, JULY 27, 1914.	CASH Apr. 25 or previous.	A WEEK AGO
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	67¼	66½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4½	53/1½	54/4½
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4½	48/9	48/9
4%	4%	Do. 4% Deb.	100	91	66	65½
4½%	4½%	Do. 4½% Deb.	100	98½	66¾	67½
5%	5%	Do. 5% Deb.	100	96	63½	64
—	—	Associated Omnibus Co., Ord. ..	5/-	3/32	1/2	1/2
7 l.	1/-	Auckland Elec. Trams. Ord. ..	1	1 3/32	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	106¾	106
—	1/-	Bath Electric Trams Pref. Ord.	1	¼	3/6	3/6
6d.	6d.	Do. 5% Cum. Pref. ..	1	5/16	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67¾	67¾
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
20/-*	28/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Do. 6% Cum. Pref. ..	10	11¾	9 1/16	£9/18/-
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87¾	87¾
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	42½	40
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	86	87
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5½	5½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91½	91½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	25½	25½
6%	5%	Do. Pref. Ord.	100	106	30½	30½
5%	5%	Do. 5% Cum. Pref. ..	100	103	51½	52½
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	83½	83½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	57¾	59½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	30½	30
6%	6%	Do. 6% Cum. Part. Pref.	100	—	74	72½
5%	5%	Do. 5% Deb.	100	92	77½	77
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	70	70
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6 3/32	7
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 5/16	78/9	78/9
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1	1/32	13/-	13/3
1/3	1/3	City of B. A. Trams	5	5½	80/-	81/-
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	82	81½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	59½	59½
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 3/32	7 3/32
6/-	6/-	Do. 6% Pref.	10	12	9¼	9¼
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/3	1/3
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1	3/16	10/3	10/3
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
5½d.	8½d.	Hong Kong Tramway	5/-	1/16	17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	3/32	2/4½	2/4½
6/6	9/6	Lanarkshire Trams Co. ..	10	10½	10 1/16	10 1/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79½
9½d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	1/32	2/1½	1/6
6d.	6d.	Do. 5% Pref.	1	5/16	6/3	5/-
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	60	60
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80	80
5%	5%	Do. 5% Inc. Debs.	100	88½	76	76
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	33½	33½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	84½	84½
7½d.%	9½d.*	Manaos Trams & Ltg. Ord. ..	1	3/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	70	70
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	73	73
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70½	70½
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	23¾	23¾
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	34	34
—	—	Do. 6% Mt. Bds. ..	100	76	30	30
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	88½	88½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	1/32	17/6	16/3
9½d.*	9½d.*	New General Traction	1	¼	7/6	7/3
8½d.	6d.	Northern Gen. Trans. Ord. ..	1	1	12/9 3/32	12/9 3/32
3/-	4/-	Para Elec. Rlys. Ord.	5	4½	78/1½	75/-
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	7/10½	7/1½
—	—	Do. 7% Non. Cm. Part Pf.	1	—	13/10½	13/10½
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1	1/32	6/6	6/6
6d.	6d.	Do. 5% Pref.	1	1/32	11/10½	11/10½
8d.	1/4	Provincial Trams. Ord. ..	1	¼	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	87	87
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	72	71½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86½	86½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	72½	72½
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/6½	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	92	92
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	78	77½
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	33/9	32/6
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	69	69
—	—	Yorks (W.R.) Elec. Trams. Ord	5	¾	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	¾	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	72	72
—	—	Metropolitan Dist. Ord. ..	100	21½	13 1/16	13 1/16
—	—	Undgd. Elec. Rys. of London ..	10	21½	28/9	30/1½
		Do. "A"	1/-	¾	4/5½	4/4½
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	104	103½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	99½	100
4%	4%	Do. 6% In. Bonds Rd. ..	—	83½	74½	76

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1913	Incr. or Dec.
Aberdare U.D.C. ..	Apr. 16	418	460	+ 42	52	1,224	+ 202
Aberdeen Corporation ..	,, 17	1,782	2,160	+ 378	46	100,231	+ 13,872
Ayr Corporation ..	,, 20	310	364	+ 54	49	21,781	+ 3,148
Belfast City	,, 19	5,667	7,342	+ 1,675	3	22,747	+ 5,840
Birkenhead Corporation	,, 21	1,607	1,876	+ 269	3	5,774	+ 997
Birmingham Corporation	Mar. 23	16,427	20,749	+ 4,322	51	960,251	+ 147,035
do. Motor Omnibuses ..	,, 23	842	1,268	+ 426	51	55,449	+ 6,390
Blackburn Corporation ..	Feb. 6	960	1,571	+ 611	45⅔	67,531	+ 11,857
Bournemouth Corporation	April 24	2,184	2,681	+ 497	3⅔	9,660	+ 2,176
Bradford Corporation ..	,, 20	6,451	6,705	+ 254	3	22,528	+ 1,746
Burnley Corporation ..	,, 20	1,617	1,863	+ 246	..	..	..
Burton-on-Trent Cor. ..	,, 21	264	385	+ 121	3	1,153	+ 341
Bury Corporation ..	,, 21	1,411	1,554	+ 143	3	4,963	+ 122
Chatham & District ..	,, 18	1,217	1,137	— 80	16	17,927	+ 708
Cork Electric	,, 11	465	622	+ 157	15	8,526	+ 1,930
Derby Corporation ..	,, 20	1,018	1,284	+ 266	3	4,020	+ 852
Dundee City	,, 17	1,324	1,606	+ 282	48½	75,694	+ 9,422
East Ham Corporation ..	,, 20	1,265	1,173	— 92	2⅔	3,650	+ 124
Exeter Corporation ..	Mar. 22	302	373	+ 71	51	20,106	+ 301
Glasgow Corporation ..	Apr. 20	25,286	28,263	+ 2,977	46⅔	1,234,460	+ 142,573
Glossop (U.E. Sup. Co.) ..	,, 20	127	160	+ 33	16	2,858	+ 837
Halifax Corporation ..	,, 16	1,918	2,204	+ 286	2⅔	5,933	+ 827
do. Motor Buses ..	,, 16	51	49	+ 2	2⅔	132	+ 9
Hastings and District ..	Mar. 18	968	1,093	+ 125	11	10,521	+ 841
Huddersfield Corporation	Apr. 20	2,722	3,062	+ 340	3	10,636	+ 889
Ilford U.D. Council ..	,, 20	654	872	+ 218	3	2,663	+ 810
Ipswich Corporation ..	,, 20	422	597	+ 175	3	1,888	+ 678
Isle of Thanet	,, 20	253	177	— 76	29	5,215	— 1,993
Kilmarnock Corporation	,, 20	170	223	+ 53	48½	10,260	+ 1,735
Lanarkshire	,, 18	2,598	3,519	+ 921	16	50,095	+ 12,236
Lancashire United ..	,, 17	1,868	2,865	+ 997	16	40,363	+ 12,143
Leeds City	,, 20	9,814	10,736	+ 922	3	33,120	+ 5,737
Leicester Corporation ..	,, 20	3,265	4,211	+ 946	..	..	..
Leyton U.D. Council ..	,, 18	1,638	1,818	+ 180	3	5,772	+ 746
Liverpool Corporation ..	,, 20	14,732	16,657	+ 1,925	15⅔	262,493	+ 41,360
Llandudno & Colwyn Bay	,, 12	311	326	+ 15	19	4,994	+ 1,334
London County Council ..	,, 24	50,936	54.235	+ 3,299	3½	191,893	+ 22,529
Maidstone Corporation ..	,, 18	180	231	+ 51	2⅔	871	+ 196
Manchester Corporation	,, 20	18,713	22,850	+ 4,137	3	68,494	+ 15,996
Nelson Corporation ..	Mar. 16	194	244	+ 50	50	11,869	+ 1,394
Newcastle-on-Tyne Cor.	Apr. 20	7,039	8,447	+ 1,408	3	24,936	+ 5,883
New St. Helens & Dist. ..	,, 17	1,027	1,384	+ 357	42	58,482	+ 13,683
Northampton Cor. ..	,, 19	695	881	+ 186	3	2,528	+ 493
Nottingham Corporation	,, 18	3,766	5,156	+ 1,390	3	13,428	+ 3,082
Oldham Corporation ..	,, 21	2,491	2,819	+ 328	4	12,208	+ 1,807
Portsmouth Corporation	Mar. 10	2,035	2,581	+ 546	..	..	..
Reading Corporation ..	Apr. 18	860	1,151	+ 291	3	3,064	
Rhondda Tramways ..	,, 4	1,351	2,461	+ 1,110	14	22,007	+ 4,542
Rotherham Corporation	,, 24	1,632	1,988	+ 356	3⅔	7,212	+ 1,276
Sheffield Corporation ..	,, 21	11,103	12,688	+ 1,585	3⅔	50,096	+ 7,475
Southampton Cor. ..	,, 17	1,666	2,274	+ 608	2⅔	5,894	+ 1,589
Southend-on-Sea Cor. ..	,, 17	679	676	— 3	3	1,851	— 53
South Shields Cor. ..	,, 13	868	1,031	+ 162	2	2,098	+ 524
Sunderland Corporation ..	,, 21	1,592	2,038	+ 446	3	6,200	+ 1,311
Sunderland District ..	,, 17	814	904	+ 90	24	20,383	+ 5,359
Swindon Corporation ..	,, 17	216	266	+ 50	2⅔	712	+ 142
Torquay Tramways ..	,, 4	450	963	+ 514	14	9,374	+ 3,267
Tyneside Trys. & Trmrds.	,, 3	599	1,116	+ 516	14	11,532	+ 3,262
Wallasey Corporation ..	,, 20	1,274	1,482	+ 208	2⅔	4,667	+ 852
Walsall Corporation ..	,, 20	812	1,096	+ 284	3	3,456	+ 1,371
Walthamstow U.D. Coun.	,, 20	1,036	1,162	+ 125	3	3,613	+ 623
Warrington Corporation	,, 18	475	719	+ 244	3	1,863	+ 618
West Ham Corporation	,, 18	3,251	3,845	+ 594	2⅔	10,099	+ 1,243
Wigan Corporation ..	,, 11	2,081	2,170	+ 89	2	3,529	+ 570
Yorkshire (West Riding)	,, 21	1,866	2,158	+ 292	16	38,041	+ 8,667

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Dublin United, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Apr. 22	£53,625	£59,417	16	£879,953	+ £61,742
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Feb. 24	3,196	3,902	48	40,644	+ 1,316
Brazilian Traction (Mlrs.)	Feb.	6,872,000	7,315,000	8	15,152,000	+ 1,014,000
Brisbane	Mar.	33,340	35,530	13	102,039	+ 5,879
British Columbia .. $	Feb.	451,679	501,150	34	3,984,379	+ 374,000
Buenos Aires Lacroze ..	Mar.	41,337	42,647	39	346,421	+ 69
Burmah Tram. & Light Rs.	Mar.	27,132	27,906	34	212,142	+ 991
Calcutta .. .. Rs.	Apr. 20	66,618	73,744	16	1,139,351	+ 64,816
Cape Town	Mar.	17,688	19,911	..	..	..
Carthagena and Herrerias	Mar.	2,955	5,316	13	13,358	+ 3,198
Cordoba	Feb.	11,896	12,972	47	147,933	+ 435
East India	Mar.	1,647	1,729	35	10,496	— 5,744
Hong Kong .. .. $	Feb. 16	12,514	18,149	7	94,318	+ 102
Kalgoorlie	Dec.	2,894	3,044	52	32,608	+ 1,176
La Plata	Mar.	4,523	5,347	13	4,803	+ 1,867
Lima	Mar.	37,586	42,106	13	127,555	+ 18,900
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Apr. 15	38,708	40,805	15	277,813	+ 34,666
Manaos .. .. Rs.	Jan.	146,493	151,871	..	..	..
Manila (8 weeks) .. $	Feb. 28	73,200	93,000	8	93,000	+ 19,800
Montevideo	Mar.	31,979	36,659	21	172,333	+ 14,941
Pernambuco	Apr. 21	3,472	4,441	16	73,937	+ 16,893
Peruvian .. .. $	Mar.	1,017,000	1,119,530	39	9,322,560	+ 1,020,168
Port Elizabeth	Mar.	4,428	4,425	..	..	..
Rangoon	Mar.	6,226	5,955	13	16,978	+ 1,514
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Feb. 23	12,963	13,670	8	104,652	— 1,821
Toronto .. .. $	Feb.	932,567	981,933	8	2,050,252	+ 115,216
Winnipeg .. .. $	Feb.	280,717	298,899	8	633,541	+ 32,879

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THE

Tramway & Railway World

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NOTICES.

All Communications an Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

COUNTY BOROUGH OF WARRINGTON.

Electricity Department.

The Electricity and Tramways Committee of the County Borough of Warrington invite Tenders for the following:—

1. Motors.
2. Transformers.

Specifications and Form of Tender can be obtained from the undersigned on payment of one guinea for each specification, which will be returned on receipt of a bona-fide Tender.

Five Shillings will be charged for extra copies of either specification.

Tenders, addressed to the "Chairman of the Electricity and Tramways Committee, Town Hall, Warrington," must be sealed with wax, and endorsed "Tender for Motors," or "Tender for Transformers," as the case may be, and delivered not later than 12 o'clock noon, on Wednesday, May 22nd, 1918.

The lowest or any tender will not necessarily be accepted.

F. V. L. MATHIAS, M.I.E.E.,
Borough Electrical and Tramways Engineer.

Howley, Warrington.

BURY CORPORATION.

Uniforms.

The Corporation of Bury invite Tenders for the supply of Uniform Clothing for Inspectors, Motormen and Conductors, comprising Great Coats, Mackintoshes, Tunics, Trousers, Caps, and Women Conductors' Hats.

Forms of Tender may be obtained and samples inspected on application to the General Manager, Central Tramway Offices, Market Place, Bury.

Tenders to be delivered to the Town Clerk, Bury, not later than 10.0 a.m. on Monday, May 20, 1918.

ISLINGTON BOROUGH COUNCIL.

The Lighting Committee of the Islington Borough Council invite Tenders for the supply and erection of Machinery and Plant, viz.:

(a) 5,000-KW. Steam Turbine, Alternator, Exciter, Condensing Plant, Switchgear, Piping, etc.
(b) Water-tube Boilers, Coal Conveyor, Telpher, Burners, Steam Piping, and other Accessories.

Specification, General Conditions, and Form of Tender may be obtained on application to the Electrical Engineer, 50, Eden Grove, Holloway, N.7, on or after April 29th, 1918. A deposit of £2 2s. will be required, which will be returned on receipt of a *bona-fide* Tender.

Tenders, under seal, and endorsed on the outside "Tender for Electric Lighting Plant," to be addressed to the undersigned, and delivered at the Town Hall, Upper Street, Islington, N.1, not later than noon, Friday, May 24th, 1918.

(By order) C. G. E. FLETCHER,
Town Clerk.

Town Hall, Upper Street, N.1.
April 12th, 1918.

POSITIONS VACANT.

COUNTY BOROUGH OF HUDDERSFIELD.

The Corporation invite applications for the appointment in the Borough Engineer's Department of an experienced Engineering Assistant at a salary of £250 per annum. The officer appointed must be thoroughly qualified to fulfil the duties of the office, particulars of which will be supplied on application to the Borough Engineer.

Applications, in candidate's own handwriting, giving full particulars of experience, age, present and previous appointments, and accompanied by not more than four recent testimonials, to be addressed to the undersigned not later than 10 a.m. on May 15th, 1918.

Canvassing will disqualify.

K. F. CAMPBELL, M.Inst.C.E., M.I.E.E.,
Borough Engineer and Surveyor.

1, Peel Street, Huddersfield.

RADCLIFFE URBAN DISTRICT COUNCIL.

Shift Engineer.

Shift Engineer wanted, with previous experience in D.C. 3-wire and Traction Supply. Experience in the operation of rotary converters will be a recommendation. Wages £3 per week of 56 hours, plus 12½ per cent. Certified undertaking. Applications giving experience, age, medical grade, and date to commence duties to be sent to the ENGINEER AND MANAGER, Electricity Works, Lomax Street, Radcliffe, Lancs.

BOROUGH OF SWINDON.

Electricity Department.

Wanted, Shift Engineer, to take charge of the evening shift in a certified undertaking. The generating station supplies A.C. three-phase, D.C., and tramways. Ljungstrom and mixed pressure turbines, and up-to-date boiler-house plant being put in. Permanent situation. Wages offered £3 plus 8s. plus 12½ per cent. per week.

Applications giving age and full details of experience and training to be sent in to the undersigned not later than May 10.

A. DIMMACK,
Borough Electrical Engineer.

SHIFT ENGINEER.

Shift Engineer wanted, preferably with single-phase, A.C., experience, for certified undertaking; wages £3 per week, plus 12½ per cent. bonus.—Applications, stating age, experience, and when able to commence duty, accompanied by copies of recent testimonials, to be forwarded forthwith to the BOROUGH ELECTRICAL ENGINEER, Eccles Corporation Electricity Works, Cawdor Street, Patricroft.

SWITCHBOARD ATTENDANTS.

Wanted, two Switchboard Attendants, accustomed to three-phase E.H.T. and D.C. switchboards; wages 32s. per week, plus £1 and 12½ per cent. bonus. Applications, stating experience, with recent testimonials, to be sent to the undersigned, not later than Tuesday, May 7th, 1918.

J. E. STARKIE,
Electricity Works, Burnley.

Wanted.—Copies of the TRAMWAY AND RAILWAY WORLD of January 1 and 13, 1916; March 9, 1916; April 13, 1916; May 11, 1916; June 8, 1916; October 9, 1916; August 16, 1917; and October 18, 1917.—Reply to Box 12, The TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2

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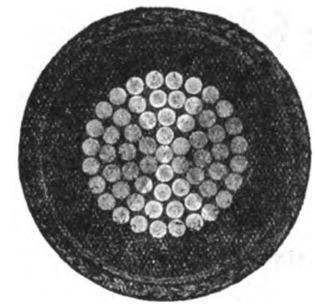
1837.  1918.

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THE
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Established in 1892 and Published by

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Sixty-four issues are published annually, including twelve large numbers which are fully illustrated and printed on art paper.

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SATURDAY, MAY 4, 1918.

REDUCTION IN TRAMWAY SERVICES.

Tramway authorities whose undertakings are situated in the south-eastern half of England are already responding with alacrity to the request of the Tramways (Board of Trade) Committee to reduce their services for the purpose of saving coal. The proposal is that coal consumption should be diminished by 15 per cent. Of course it is hardly possible to bring about such a change at once, but steps are already being taken in the direction desired. In towns where there is little or no unavoidable local travelling on Sundays, the problem is a comparatively simple one. By simply abolishing all Sunday services of cars, the mileage run per week, and consequently the coal consumption, should be reduced by something like eight or ten per cent. That is a first step, and it has already been taken in several towns. In the great cities, where there is more Sunday labour, and where the distances traversed are longer, the total stoppage of Sunday cars would be a much greater inconvenience, and where munition works are kept going on the first day of the week it would be impracticable. But even in those cases there should be no great difficulty in materially reducing the Sunday services, and cutting them off altogether comparatively early in the evening. Many towns are stopping the running of the cars at an earlier hour at night on week days than hitherto, and in this direction also considerable saving can and must be effected. The same remark applies to cutting down the services during the slack hours of the day. It is, of course, desirable to avoid undue overcrowding in the cars, but it is also desirable so to reduce the service that every car shall be well filled. Were it a matter of preference, no manager would want to reduce the services. In normal times it is the business of transport undertakings to give the public all the facilities that are economically possible. A frequent service with seats for every passenger is the ideal which every traffic manager seeks to attain. But managers and the great bulk of the public quite realise that in these times they cannot get all they would like. They have to make the best of existing conditions while they all help, directly or indirectly, to winning the war. That is the only thing that matters. The rest is "leather and prunella." But in all cases in which people are asked to make sacrifices it is well to be able to convince them that the sacrifices are necessary, and also to make clear to them why they are necessary. In the case of reduced tramway services it is not a very difficult task. The public know that because of the "comb-out" of miners for the Army, the congestion of traffic on the railways, and the necessary appropriation of coal carrying steamers for war purposes, there is a scarcity of coal, particularly in the south-eastern part of the country. It is not difficult to impress on their minds the fact that the running of every unnecessary car mile means the waste of coal which cannot be spared, and that a reduction in tramway services means a corresponding saving in coal at the power station. These truths are so self-evident that they can be brought home to a child. That they are already widely recognised is proved by the cheerful way in which reductions of facilities are already being accepted. Much greater hardships will be borne without grumbling. If there are any "disgruntled" persons who think only of their own comforts, let them remember that this country is fighting for its life, and that the people in enemy countries are very much worse off than the public are in England.

DAMAGES FOR PERSONAL INJURIES.

APPEAL IN THE HOUSE OF LORDS.

It is certainly unusual for a law case on a question of damages for personal injuries by a tramway accident to be appealed to the House of Lords for final decision. An example has, however, been given in the case of Taylor *v.* Dumbarton Burgh and County Tramways Co. The action was brought in the Court of Session, Edinburgh, by Stewart Taylor, as administrator in law for his son James Taylor, 2 years of age. The child was playing on the road in Old Kilpatrick, on January 27, 1916, when a repairing car belonging to the defenders, which had been standing while a pole repair was being executed, was started, and the boy lost two fingers of his right hand. Lord Anderson, as Lord Ordinary, awarded damages of £150 against the tramway company. The Second Division, on appeal, found that the pursuer had failed to establish fault on the part of the company's servants, and reversed the Lord Ordinary's judgment, but it was unanimously restored by the House of Lords on April 26.

The Lord Chancellor, in moving that the appeal should be allowed, said that the repairing car had been at a standstill in order to effect repairs on a standard, and children had gathered round to watch the proceedings. From the evidence it appeared that all the children, with one exception, were on the north side, and when the car was about to start the conductor warned the children there. He did not look on the other side of the car, and the child Taylor there was seen by no one. His hand was run over. As the south side had not been looked to it was not unreasonable for Lord Anderson to come to the conclusion that there was actionable negligence on the part of the defenders' servant. Each case of this kind must be judged on its own circumstances. The only principle of law in this case was that where there were children about the man in charge of the car should look and see if there were children in danger. Even granting that there was contributory negligence in allowing a young child to be in the street without sufficient guardianship, that did not prevent the right to recover if it was found that the whole cause of the accident was want of care on the part of those in charge of the car. In order to bar an action the contributory negligence must be in the transaction itself, and not in an antecedentary cause.

Viscount Haldane, Lord Shaw, and Lord Parmoor concurred. Lord Shaw also criticised the action of the Second Division of the Court of Sessions in not allowing the case to be tried before a jury. Nobody could contend that amendment of the law, however justifiable, or any encroachment upon constitutional right, could be argued pro and contra in a law court or in any other place than the Legislature, with a view to the repeal or modification of the law. The consequences in the present case had been deplorable. Their Lordships had now a case before them which might have been concluded by the simple verdict of a jury, but it had been made the subject of appeal, and they were now trying a case which, for aught yet seen on the merits of it, should never otherwise have been disposed of than conclusively and finally by a verdict of a jury. The expense to both parties was a deplorable incident, and it was one of the consequences of having varied the procedure, which, so far as they had been instructed, had not been justified by any legal element in the case.

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DIFFICULTIES OF OPERATION IN LIVERPOOL.

Mr. C. W. Mallins, general manager of Liverpool Corporation Tramways, reporting on the operation of the services during the past year, says the work was carried out with very great difficulty owing to the constant demand made by the military authorities for additional men, together with the ever-increasing difficulty of obtaining material and labour for repair and maintenance. There were 2,700 men employed in the department when the war broke out, and of that number 2,200 left the service to join the forces. The vacancies thus created had been filled as far as possible either by men incapable of military service or by women, a class of labour which would not, under normal conditions, have been engaged for the purpose, with the result that a very heavy strain had been placed upon those responsible for the operation of the service, as it was found most difficult to enforce discipline in connection with this class of labour. Nevertheless, looking at the problem as a whole, it must be admitted that the new class of labour—especially the women—rendered useful service to the community by coming forward at a time of great national stress.

It was not the curtailment of the service which brought about the present overcrowding and inconvenience. The overcrowding was the result of the enormous increase in the number of passengers who desired to travel by the cars as compared with pre-war times. The increase in the number of passengers who travelled by their system during the year 1917, as compared with pre-war years amounted to 40,000,000. This enormous increase in the number of passengers was brought about by various causes, as for example :—The increase of 50 per cent. on the railway fares ; the total abolition of certain local railway services, and the great reduction in others ; the diversion of shipping from other ports to Liverpool, together with the increase in the Admiralty work now carried out in the port of Liverpool ; and the great number of munitions of war, aircraft, etc., factories, which have come into operation in and around Liverpool where vast numbers of persons are employed, most of whom use the tramway service.

The Tramways Committee are, however, doing everything possible by impressing upon the Board of Trade and other Government Departments the importance of granting the necessary facilities to obtain adequate material and labour to increase the tramway service in proportion to this great increase of passengers. On the whole, the public had borne the inconvenience without much complaint, knowing, as the majority obviously did, the great difficulty under which the system was being operated.

WAGES AWARD IN DUBLIN.

Mr. J. B. Baillie, the arbitrator appointed to decide on the application of the National Transport Workers' Federation and the Amalgamated Association of Tramway and Vehicle Workers, on behalf of their members employed by the Dublin United Tramways Co., Ltd., for a 20s. advance on pre-war rates of wages, the advances already made by the Company to the employés since the war to merge in the 20s., has made the following award :—

(1) That those employees concerned whose aggregate advances since the war do not exceed 15s. over pre-war weekly wages shall receive a further advance of 5s. per full ordinary week. (2) That (subject to Clause 3) those skilled employees engaged at the power-station, overhead department, and Ballsbridge works, who are concerned and whose aggregate increases since the war are in excess of 15s. over pre-war weekly wages but less than 20s., shall receive such further weekly increase over the aggregate advances made in their respective grades as shall produce 20s. increase over the pre-war weekly wages. (3) That the advances do not apply to traffic, motor, or ticket inspectors, time-keepers, the tradesmen at Ballsbridge works, the cable department, and the workmen at the Inchicore works.

(4) That the advances shall be reckoned in the calculation of all overtime as ordinarily understood by the company. (5) That the advances shall be considered to be due to and dependent upon the abnormal economic situation created by the war and the increased cost of living ; and (6) that the advance shall be deemed to have come into operation on the pay day of the week commencing April 8, and shall be payable for the week preceding and thereafter.

The directors of the tramway company have introduced revised fares.

CONVERSION OF TOURING CARS TO TRUCKS.

Sir H. Nield, in the House of Commons on April 24, asked the President of the Board of Trade whether he was aware that on February 21, and again on March 1 last, letters were addressed to the Road Transport Board by the British representatives of the Commercial Car Unit Co., of Philadelphia, the manufacturers of the Truxtun truck unit, an invention whereby certain types of motor touring cars could be inexpensively converted into sound and serviceable one-ton transport trucks, and that no reply has been received to these letters or any indication given as to the facilities which the Road Transport Board would give to enable the suggestion contained therein to be developed ; and whether he would cause the subject to be examined into and considered with a view to the relief of the present congestion in the transport of goods.

Mr. Wardle (Parliamentary Secretary to the Board of Trade) : Three letters have been received by the Road Transport Board relative to the Truxtun truck unit from the London representatives of the Commercial Car Unit Co., to each of which a reply has been sent. The question of tonnage is an obstacle to the importation of these units, and in the present circumstances special facilities for their manufacture in this country would hardly appear to be possible.

INCREASES IN FARES.

Mr. C. J. Spencer, general manager of Bradford Corporation tramways, in a report to the Tramways Committee on the question of fares, recommends an increase of 50 per cent., the minimum fare to be paid by any passenger to be not less than one penny. There is an increase in wages of £24,230 to be met, and several unsettled claims are still before the Committee. The increased cost of electric power and materials has also to be provided for and the working expenditure, including financial charges, for the current year will probably be increased by nearly £76,000. After careful consideration of the revenue probabilities, Mr. Spencer thinks it would be unwise to anticipate any considerable increase in receipts this year over last. In summing up the situation, the manager states that the Committee will have to meet very heavy expenditure at the close of the war in addition to the already increased ordinary expenses, and that reconsideration of fares is necessary. He suggests that the City Council should be advised that for the present the tramways department ought not to be expected to contribute to the rates.

The new scale of fares on the Birmingham Corporation tramways came into operation on Monday last. The alterations include a curtailment in the length of all penny stages from the city and an increase of a halfpenny in other stages. Half fares for children are withdrawn on both cars and omnibuses. Children over the age of 3 and under 14 will be carried at half fares, with a minimum fare of one penny.

Not all halfpenny fares are to be withdrawn at Leeds as was reported in our last issue. Owing to some misconception of the action of the Committee, it was understood even by some of the members themselves that the decision applied to all halfpenny fares, but the minute as officially recorded is " that halfpenny fares on the first two halfpenny stages from the centre of the city be abolished."

Dublin Corporation have instructed the Town Clerk to consult with the Law Agent as to how far the increased fares adopted by the Dublin Tramways Company comply with the agreement between the Corporation and the Company. The penny stages have been shortened and season tickets between Howth and the city have been withdrawn.

At Salford stages have been shortened by from 500 yards to 70 yards, and workmen's tickets are to be abolished.

Burnley Tramways Committee propose to increase fares as from June 1. School children at present using discount tickets will be affected and a number of transfer tickets will be abolished.

HEAVY DAMAGES IN OMNIBUS ACCIDENT.

CASE AGAINST THE NATIONAL STEAM CAR COMPANY.

Before Mr. Justice Bray and a special jury, Mr. Frederick J. Stevenson, of Barvas, Hampstead Road, Watford, was awarded £3,000 damages for injuries received on March 22, 1917, through his being knocked down by one of the defendants' motor-omnibuses while he was walking along the pavement, near St. James's Church, in Piccadilly.

The plaintiff was valuer and surveyor to the Lord Howard de Walden Estates in London. In October, 1915, as he was alighting from a train at Watford Station, he was injured through the train restarting without warning, and a sum was paid to him by the London and North Western Railway Company. Evidence was given that by the beginning of 1917 he had almost recovered from this accident, and was again engaged in his occupation as a valuer. On March 22, 1917, he had been to a *matinée* at the St. James's Theatre with his cousin, and afterwards he was walking along Piccadilly towards St. James's Street, when, without any sort of warning, he was struck by the omnibus in the middle of the back and thrown violently to the ground. His left arm was fractured and his spine was injured. His nervous system was shattered, and insomnia became so severe that for some months he was compelled to take narcotics under medical advice. In all Mr. Stevenson consulted nine doctors, and for the defence it was alleged that this course was unreasonable.

For the defence it was also alleged that the injury to the spine was quite independent of the accident, and that the plaintiff's nervous condition was due to other causes.

The conductress on the omnibus gave evidence that at the time of the accident the road was very greasy. Police witnesses said that it had been snowing heavily that day and the roads were very wet.

The jury found for the plaintiff for £3,000. Judgment was given accordingly, with costs.

Petrol Restriction and Tramway Traffic.—It is observed that in Liverpool the ban on the use of motor cars has led to a greater patronage of tramcars, and to a revival of the use of horse-drawn vehicles by people of means. A large number of business men have taken to cycling as a means of travelling to the city now that they are deprived of their cars.

The Equipment and Engineering Company, of 2 and 3, Norfolk Street, Strand, W.C.2, inform us that they have acquired the exclusive licence to manufacture and sell the " Daysohm " magnetic clutch for arc welding machines, from the patentees, Messrs. Davies and Soames, and all inquiries respecting the clutch for electric welding, should be addressed to the Equipment and Engineering Company as above. For all other purposes, however, inquiries should be addressed to the Patentees, at Faraday House, 66, Southampton Row, W.C.1.

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THE COLLECTION OF TICKETS.

TO THE EDITOR OF THE TRAMWAY AND RAILWAY WORLD.

SIR,—In an article on the "Collection of Tickets" in your issue of April 20, you make the following remark:—

"Though the scheme succeeded in Burnley, it has not been generally adopted, probably because of the additional labour involved, and because in the case of tramways with very heavy loaded cars, it would not be very practicable."

Kindly allow me to say at the moment that the heavier the load the greater the necessity for the collection of tickets by the conductor. Boys of 16 years age and women conductors are daily carrying out as an ordinary part of their duty, that which you suggest is impracticable, and this on heavy bogie cars with a large carrying capacity.

The checking question is one which will be heard more of in the future, probably when the managers can once again meet in a conference and discuss useful subjects of this character. I dealt fully with the matter in your issue, August 14, 1913, but apparently so far without any result.—Yours faithfully,

Burnley Corporation Tramways, HENRY MOZLEY.
Queen's Gate, Burnley, April 30, 1918.

MISCELLANEOUS NEWS AND NOTES.

Leyton Council is pressing for authority to purchase two electric dust vans as a matter of urgency.

Vandervell Moon Chart.—Messrs. C. A. Vandervell and Company have issued copies of their useful moon chart for May.

Assessment of Newcastle Tramways.—By agreement with the local Assessment Committee, the rateable value of Newcastle Tramways has been reduced by £13,500.

Stoppage of Cars at Huddersfield.—Owing to a break in the trolley wire in New Street shortly after 10 p.m. on Tuesday, the cars on all sections were stopped for about twenty minutes.

Additional Cars for Preston.—The Town Council intend to purchase six additional cars from Sheffield Corporation. The cars are single-deckers and are required to meet the greatly increased traffic.

Fine for Spitting in a Tramway Car.—At Huddersfield a man was fined 20s., or in default eleven days for spitting in a tramway car. When the conductor pointed out the offence, the defendant repeated it.

Berlin Tramway Cars and Omnibuses, says the *Daily Mail*, are now used by such large numbers of wounded men that the management is displaying permanent placards reading "Be careful of the wounded."

Motor Omnibuses for Lancaster.—Lancaster Corporation has applied for a provisional order to enable it to increase the number of its electric motor omnibuses from four to twelve. The cost of each vehicle is estimated at from £1,100 to £1,200.

Tramways for Milan Port Extension.—In connection with a great project, the introductory stages of which have already taken form, for a port at Milan, Italy, an important system of tramways and light railways is included.

Air Raid Signal at Greenwich Station.—At the request of the Greenwich metropolitan borough council, the installation of an air raid warning signal has been effected on the roof of Greenwich power station at an approximate cost of £12.

Restrictions in the use of Gas and Electricity.—All communications on the subject of the restrictions in the use of gas and electricity should be addressed to Mr. Garnham Roper, C.B., assistant secretary to the Board of Trade, 7, Whitehall Gardens, London, S.W.1.

Walthamstow Tramways Committee object to the resumption of a service of motor omnibuses to Chingford on Sundays. The contention is that this is a pleasure service, and the attention of the Petrol Committee of the Local Government Board is being drawn to the matter.

Goods Carriage at Scarborough.—The Scarborough Electric Tramways Company propose to carry fish on the tramways from the piers to the goods station, and the Government is to be asked to grant assistance toward the cost of laying down the additional track that will be necessary.

Extension of Electricity Works at Barrow.—The Barrow-in-Furness Town Council propose to apply to the Local Government Board for sanction to borrow £22,800 for electricity extension, including £18,500 for plant and foundations, £3,100 for transformers, switchgear, etc., and £1,200 for mains.

London United Tramways.—The Southall District Council have been informed that the London United Tramway Coy. will withdraw the part of their Parliamentary Bill proposing to abandon the Southall and Uxbridge portions of the undertaking. Arrangements have been concluded for making good the track and repairing the cars.

Potteries Tramways.—Stoke-on-Trent Council have decided be by 34 votes to 7 not to seal the proposed agreement between the Corporation and the Potteries Electric Traction Co. for the future working of the tramways. Mr. R. J. Howley, chairman of the company, had an interview with the Council prior to the voting, and expressed disappointment that the agreement had not been signed by the Council. The company could not allow it to hang, seeing that they had sealed it and accepted it, and were now simply waiting for the Corporation to do likewise. The Council had been very hard. It had been a question of drawing tooth after tooth out of the company, but the agreement now before them was the last word.

Institution of Automobile Engineers.—Mr. J. B. Hoblyn will read a paper entitled "Commercial Steels and their Heat Treatment," at the meeting of the Institution of Automobile Engineers at the Royal Society of Arts, John Street, Adelphi, London, W.C., on Wednesday, May 8, at 7.30 p.m. Cards of invitation may be obtained on application to the Secretary of the Institution of Automobile Engineers, 28, Victoria Street, S.W.1.

Disabled Service Men for Tramways.—The Ministry of National Service have invited the Comrades of the Great War Association to provide a large number of tramway car and motor omnibus drivers and conductors. In announcing this request the Association states: "That men must have two arms and be generally healthy; one leg lost is no bar. Good pay during training." Application is to be made to the employment agent, Comrades of the Great War, 8, Grosvenor Crescent, W.

Jitney Competition Eliminated at Vancouver.—The British Columbia Electric Railway Company has received cable advice that the Parliament of British Columbia has granted full powers to the city of Vancouver to eliminate the jitney (motor) competition both in the city and to New Westminster. The city of Vancouver applied for these Parliamentary powers to enable the city to carry out its agreement to give effect to the report of the Commission appointed last year by the Government of British Columbia.

"Have Your Penny Ready."—A suggestion is made by a Liverpool correspondent that passengers should provide themselves more generally with pence and so avoid harassing the conductors to change florins and half-crowns. The public might be encouraged to follow the advice by notices displayed in the cars. The time lost owing to conductors having to give change is in the aggregate considerable, and in these days when the cars are crowded the extra work adds greatly to the conductors' duties.

Boys' Dangerous Practice.—At the hearing of a number of summonses against boys for jumping on tramway cars and obtaining free rides at Leeds, it was stated on behalf of the Corporation that they would take any steps suggested by the Bench to stop the practice. Sir George Cockburn suggested that in addition to posting notices in the cars warning parents against the danger of the practice, similar notices should be posted in the schools and that the children should also be warned by the teachers.

New Tramway Barriers at Leeds.—A conductor, in a letter to the *Yorkshire Evening Post*, says that the new barrier system recently introduced at Briggate, Leeds, for the regulation of tramway traffic is proving a great advantage. The non-stop run from City Square through Boar Lane to the barriers gives conductors a chance to get all bookings, but the greatest boon is the avoidance of the crush at Boar Lane corner, where the orderly ascent of passengers at the front of the car compared with the unruly rabble of former days is a notable improvement.

Depletion of Tramway Staffs.—In reviewing the case of S. W. Mercer (28, A.1.), a motorman, and F. Ralph (A.1), an assistant overhead linesman, of the Chatham and District Tramways Company, it was stated that efforts to find substitutes had been unsuccessful, and the company was very short of men. As the Tramways (Board of Trade) Committee were dealing with tramway staffs, the tribunal agreed that conditional exemption should stand, and notice of appeal was given. Colchester tribunal has granted conditional exemption to a fitter and shed foreman engaged at the tramway depot, but has required a painter (37) to join up by May 9.

Coal Conservation.—Representatives of municipalities in the north-east of England met at Newcastle on April 22, and agreed that the production of electrical energy for public utility purposes should be under public control. The following resolution was adopted:—"That this conference, whilst recognising that the unification, production, and distribution of electrical energy over areas sufficiently large and carefully defined is desirable, does not endorse the recommendations in the report of the Coal Conservation Sub-Committee, and agrees to appoint a Committee to consider that report, and prepare a reasoned statement in relation thereto.'

Reduction in Tramway Services.—To meet the requirements of the Board of Trade for economising power, the tramway services are being reduced on a number of systems. Bristol Tramways and Carriage Company have suspended their tramway and motor omnibus services on Sundays, and on week-days the vehicles will cease running an hour earlier than usual. Exeter Corporation Tramways Committee have decided to suspend the Sunday services, which have hitherto been run after 2 p.m. Some complaint has been made at Birmingham owing to the cessation of the service at 11 p.m. instead of 11-30 p.m., but the Tramways Committee are firmly convinced of the necessity for the change.

Complaints of Overcrowding at Worcester.—At a meeting of the Watch and Lighting Committee of the Worcester Council, a letter was read from the Tramways Company in reply to a letter from the Committee making certain complaints. The company contended that nothing was left undone, and that the condition of the cars was all that could be expected under existing circumstances. They would have no objection to the appointment of a committee to inspect the cars and routes. While admitting that overcrowding took place at times, it was pointed out that the women conductors could not prevent munition workers from crowding the cars, and they suggested that the committee should issue instructions to the police to remove offending passengers and take proceedings against them. The chief constable reported that Mr. R. H. Dickinson, chief engineer, and Mr. H. Dudgeon, chief inspector of the overhead equipment of the Birmingham Corporation tramways, had inspected the Worcester cars and overhead work, and had found that they were in good condition.

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Collection of Tickets.—The manager of an important tramway system recently reported to his Committee that there is an abnormal difficulty in obtaining tickets. To meet the difficulty the tramway cars have been swept of used tickets at the depot, and the public are now asked to assist by dropping their tickets in the cars instead of in the street. An improvement on this appears to be the placing of boxes on the cars into which passengers are invited to drop their tickets. This method, as mentioned in our issue of April 20, has been adopted in a number of towns with advantage. Mr. A. V. Mason, manager of the South Metropolitan Electric Tramways, not only places notices in the cars inviting passengers to do this, but he has inserted displayed advertisements in the local newspapers urging passengers to retain their tickets. One of these advertisements is reproduced elsewhere in this issue.

FINANCIAL REPORTS AND MEETINGS.

The Unione Italiana Tramways Elettrici, Genoa, pay a dividend of 5 per cent. on 1917 working year.

Auckland Electric Tramways Co., Ltd.—An interim dividend at the rate of 5 per cent. (6d. per share) less tax has been declared on the ordinary shares.

Stewarts & Lloyds, Ltd.—A resolution has been passed increasing the capital to £3,100,000 by the creation of 350,000 deferred shares of £1 each, of which half are to be issued.

Blackburn Corporation Tramways.—The results for the year ended March 25, 1918, show a profit of £4,531 compared with a loss of £2,440 last year. The balance has been carried to the permanent way renewals fund.

Bolton Tramways Committee have agreed to allocate £15,500 in aid of the rates, this being the amount estimated to be available for the purpose at the beginning of the year. The estimate for the year ending March, 1919, allows for a like sum to be paid to the rates

Dundee Corporation Tramways.—Mr. G. A. Johnston, convener of the Dundee Tramways Committee, alluded at a recent Council meeting to the satisfactory accounts for the year. They were, he said, satisfactory because the revenue had gone up £10,000, but it had nearly all been swallowed up by increased costs. He thought it was very creditable that they had been able to carry on so far without an increase in fares. It had to be kept in view not only that there was now a great increase in the cost of repairs, but that after the war a large expenditure would have to be incurred in reconstruction.

Brighton Corporation Tramways.—The result of the past year's working is again very satisfactory, and reflects the exceptional prosperity that Brighton is now enjoying. There is a net profit of about £16,000, or more than double the record profit of £7,251 for the previous year, and the appended table shows the revenue and net results, after meeting all charges, since 1903 :—

Year.	Revenue.	Profit or Loss.	Year.	Revenue.	Profit.
	£	£		£	£
1903-4	46,264	—4,778	1910-11	50,747	137
1904-5	50,339	—321	1911-12	54 028	26
1905-6	51 620	1,615	1912-13	53,798	931
1906-7	50,652	2,410	1913-14	56,838	842
1907-8	47,200	—969	1914-15	56,525	18
1908-9	47,809	—2,420	1915-16	57,936	2,230
1909-10	51,358	1,190	1916-17	64,819	7,251

Madras Electric Tramways, Ltd.—The accounts for the year ended December 31, 1917, show a gross profit of £27,830. After deducting interest and London office expenses, making provision for the debenture stock sinking fund, and transfering £8,000 to depreciation and renewal accounts, there remains a balance of £13,522, and including the balance from last year of £4,315 there is a total available of £17 837. This sum has been dealt with as follows :—Dividend on preference shares to March 31, 1918, £6,000 ; interim dividend of 4 per cent. on the ordinary shares paid September 30, 1917, £2,290 ; further dividend on the ordinary shares of 4 per cent., £2,290 ; transferred to general reserve fund, £3,000 ; leaving a balance to be carried to next year's account, subject to excess profits duty (if any) of £4,256. The traffic receipts show an increase of 10.3 and the expenditure in Madras an increase of 6·8 per cent. over 1916. The debenture stock sinking fund now amounts to £9,129.

Oldham, Ashton and Hyde Tramways Coy.—The report for the past year states that the revenue amounts to £42,706, and the expenditure (including £1,408 for debenture interest) amounts to £26,888, leaving a net profit of £15,817, which, added to £2,782 brought forward, makes an available balance of £18,589, which the directors propose should be applied as shown in the accounts, viz. :—To be placed to reserve fund (raising the fund to £43,956), £10,000 ; to dividend at the rate of 5 per cent. for the year on the cumulative preference shares, £2,500 ; to dividend on the ordinary shares, at the rate of 6 per cent. for the year (in respect of which an interim dividend for six months at the rate of 5 per cent. per annum has been paid), £3,000 ; to be carried forward £3,099. On January 28 the Corporation of Hyde gave the company notice that they intended to exercise their statutory powers to purchase that portion of the company's tramways, about 1 mile 5 furlongs, within their area, and negotiations are now proceeding with the Corporation. The other local authorities, in whose areas the remainder of the track, about 6 miles 2 furlongs, is situated have passed the necessary statutory resolutions and have applied to the Board of Trade for their approval to a proposed service of notices, under Section 43 of the Tramway Act, 1870, requiring the company to sell to the local authorities so much of the company's tramways and undertaking as is within their respective areas.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended May 1 amounted to £57,168, an increase of £4,283, as compared with the corresponding period last week. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial (year) to May 1 (four and a half weeks), the total receipts were £249,079, an increase of £26,830 on the corresponding period of 1917.

Thomas Tilling Ltd.—At the twenty-first annual meeting of this company held in London on April 29, Mr. R. S. Tilling, who presided, said that nearly every section of the business was now being used for work of national importance, and a large portion of it has been declared a controlled establishment under the Munitions Act. One of the directors, Mr. Walter Wolsey, jun., has been appointed by the Government on the Advisory Committee of the Road Transport Board. During the past year the business had been conducted under enormous difficulties. The accounts were kept departmentally, enabling them to ascertain when any portion of the business ceased, owing to changed conditions, to be profitable, and it would enable them temporarily or permanently to close down any section of the concern if scarcity of material, difficulties of labour, or other cause required. Their industry played an important part in passenger-carrying traffic. There was, however, a very large section of it not so well-known, which was almost exclusively engaged in the collection and distribution of munitions of war, food, and other necessaries in and around London, and some of the provincial towns. The report was adopted and a dividend of 15 per cent. declared.

Bath Electric Tramways Ltd.—Mr. J. B. Hamilton, presiding at the fifteenth ordinary general meeting of this company in London on April 29, said that, notwithstanding all the difficulties and new conditions which the company had had to face, there was a substantial increase in revenue for the year. In traffic revenue alone they had an increase of £4,784. There was no doubt, that the character of the traffic had considerably altered during the year owing to conditions brought about by the war, otherwise the revenue which they had been successful in obtaining would have been quite impossible. Working costs had risen considerably. In connection with motor omnibuses they had been exceedingly fortunate. Owing to some extent to the decreased railway service and the increased charges, they had been able to raise their omnibus fares, which were not fixed by statute, and the motor omnibuses had been of very valuable assistance in keeping the undertaking together, and had given the company a very good return. They were fully alive to the necessity of keeping themselves in the very front of any improvements which came forward, and with the assistance of their general manager, Mr. Hardy, they were the first tramway undertaking to adopt the use of gas for public service purposes. This had worked very satisfactorily, and although it did not mean any economy as compared with petrol at its old price it had enabled the company to keep running and to earn revenue. In addition they had been able to continue and develop contracts for the carrying of petrol by those of their motor vehicles which were not taken by the War Office, and a steady and lucrative income had been derived from this work. On the whole, the accounts were put forward by the directors with a considerable amount of satisfaction. With regard to the outlook for the present year, he was sorry to say it was not so cheering. The scarcity of fuel and the reduction in consumption which had become necessary implied, of course, a reduction in power, which might vitally affect their earning capacity, but they would endeavour to meet the new requirement by making alterations in their stoking plant, and probably in the class of fuel used, and so attain the desired result without causing more than a very small reduction in mileage. Labour conditions also were becoming increasingly difficult, and they were also faced with the shortage of materials required for maintaining the tramways.

(*Continued on page 280.*)

DICK, KERR & Co.,

Limited,

ABCHURCH YARD, CANNON STREET,

LONDON, E.C.,

ENGINEERS & CONTRACTORS.

Complete Equipment

TRAMWAYS & LIGHT RAILWAYS

at home and abroad

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

DIVIDENDS PREV.	DIVIDENDS LAST.	NAME.	PAID.	PRICE, JULY 27, 1914.	CASH MAY 2 or previous.	A WEEK AGO.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	66½	67½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4¼	55/-	53/1½
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4¼	48/9	48/9
4%	4%	Do. 4% Deb.	100	91	66	66
4½%	4½%	Do. 4½% Deb.	100	98½	66½	66½
5%	5%	Do. 5% Deb.	100	96	63½	63½
—	—	Associated Omnibus Co., Ord. ..	5/-	3/8	1/2	1/2
1d.	1/-	Auckland Elec. Trams. Ord. ..	1	1 3/8	20/3	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	107½	106½
—	1/-	Bath Electric Trams Pref. Ord.	1	½	3/6	3/6
6d.	6d.	Do. 5% Cum. Pref. ..	1	7/8	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
20/-*	28/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Do. 6% Cum. Pref. ..	10	11⅛	9 9/16	9 9/16
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	42¼	42½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	87	86
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5⅛	5⅛
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91¼	91½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	24⅜	25½
6%	5%	Do. Pref. Ord.	100	106	31¼	30⅜
5%	5%	Do. 5% Cum. Pref. ..	100	103	51	51½
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	83½	83½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	59½	57½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	31	30½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	75	74
5%	5%	Do. 5% Deb.	100	92	77½	77½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	65½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	70	70
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6 3/16	6 3/16
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	78/9	78/9
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73¼	73½
1/-*	1/-*	Cape Elec. Trams.	1	11/16	13/-	13/-
1/3	1/3	City of B. A. Trams	5	5½	80/-	80/-
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	82	82
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	59½	59½
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 3/32	7 3/32
6/-	6/-	Do. 6% Pref.	10	12	9¼	9¼
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/32	1/3	1/3
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1	1/32	10/3	10/3
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
5½d.	8½d.	Hong Kong Tramway	5/-	1/32	17/9	17/9
5%	5%	Do. 5% Deb. ..	100	87½	80½	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	¼	2/4½	2/4½
6/6	9/6	Lanarkshire Trams Co. ..	10	10½	10 1/16	10 1/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79½
9½d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	3/32	2/4½	2/1½
6d.	6d.	Do. 5% Pref.	1	1/16	6/-	6/3
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	60	60
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80½	80
5%	5%	Do. 5% Inc. Deb.	100	88½	76	76
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	38½	38½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	85/-	85/-
5%	5%	Do. 5% Deb.	100	100	84½	84½
7½d.%	9½d.*	Manaos Trams & Ltg. Ord. ..	1	1/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	70	70
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	73½	73
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	69	70½
5%	5%	Do. 5% Deb.	100	87	80	80
$1½	$1½	Mexico Trams. Common ..	$100	70	23¾	23⅞
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	35½	34
—	—	Do. 6% Mt. Bds. ..	100	76	30	30
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	88½	88½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	88½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	1/32	19/-	17/6
9½d.*	9½d.*	New General Traction	1	⅛	7/1½	7/6
8½d.	6d.	Northern Gen. Trans. Ord. ..	1	1/32	12/9½	12/9½
3/-	4/-	Para Elec. Rlys. Ord.	5	4½	78/-	78/1½
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	6/6	7/10½
—	—	Do. 7% Non. Cm. Part Pf.	1	—	14/-	13/10½
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1	1/32	6/6	6/6
6d.	6d.	Do. 5% Pref.	1	1/32	11/10½	11/10½
8d.	1/4	Provincial Trams. Ord. ..	1	⅛	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	87	87
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	72	72
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	87	86⅛
5%	5%	Do. 5% Perp. Deb. ..	100	99½	72½	72½
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/6½	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	92	92
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	78	78
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	35/-	33/9
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	69	69
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅛	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅛	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	72	72
—	—	Metropolitan Dist. Ord. ..	100	21½	13½	13½
—	—	Undgd. Elec. Rys. of London ..	10	21½	30/-	28/9
		Do. "A"	1/-	⅛	4/6	4/5½
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	104	104
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	99	99½
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	74½	74½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C. ..	Apr. 23	397	461	+ 64	3	1,684	+ 266
Aberdeen Corporation ..	„ 24	1,847	2,192	+ 345	47	102,423	+ 14,217
Ayr Corporation	„ 27	300	416	+ 116	50	22,198	+ 3,265
Belfast City	„ 26	5,842	7,475	+ 1,633	4	30,222	+ 7,473
Birkenhead Corporation	„ 28	1,622	2,073	+ 451	4	7,847	+ 1,448
Birmingham Corporation	Mar. 23	16,427	20,749	+ 4,322	51	960,251	+ 147,035
do. Motor Omnibuses ..	„ 23	842	1,268	+ 426	51	55,449	+ 6,300
Blackburn Corporation ..	Feb. 6	960	1,571	+ 611	45⅔	67,531	+ 11,857
Bournemouth Corporation	May 1	2,180	2,727	+ 547	4⅔	12,387	+ 2,724
Bradford Corporation ..	April 27	6,875	7,527	+ 652	4	30,055	+ 2,398
Burnley Corporation ..	„ 27	1,718	2,115	+ 397	..	..	..
Burton-on-Trent Cor. ..	„ 28	257	377	+ 120	4	1,531	+ 461
Bury Corporation ..	„ 28	1,451	1,879	+ 428	4	6,841	+ 549
Chatham & District ..	„ 25	1,215	1,170	— 45	17	19,097	+ 662
Cork Electric	„ 25	567	495	— 72	17	9,610	+ 1,955
Derby Corporation ..	„ 27	1,054	1,439	+ 385	4	5,460	+ 1,237
Dundee City	„ 24	1,357	1,538	+ 181	49⅓	77,233	+ 9,615
East Ham Corporation ..	„ 27	1,321	1,307	— 14	3⅔	4,958	+ 110
Exeter Corporation ..	Mar. 22	302	373	+ 71	51	20,106	+ 301
Glasgow Corporation ..	Apr. 27	25,661	28,659	+ 2,998	47⅔	1,263,119	+ 145,514
Glossop (U.E. Sup. Co.) ..	„ 27	140	176	+ 36	17	3,033	+ 872
Halifax Corporation ..	„ 23	2,069	2,226	+ 157	3⅔	8,160	+ 984
do. Motor Buses ..	„ 23	43	52	+ 9	3⅔	184	+ 19
Hastings and District ..	Mar. 18	968	1,093	+ 125	11	10,521	+ 841
Huddersfield Corporation	Apr. 27	2,895	3,441	+ 546	4	14,077	+ 1,435
Ilford U.D. Council ..	„ 27	671	871	+ 200	4	3,533	+ 1,020
Ipswich Corporation ..	„ 27	453	658	+ 205	4	2,547	+ 892
Isle of Thanet	„ 27	290	220	— 70	30	5,435	— 2,064
Kilmarnock Corporation	„ 20	170	223	+ 53	48⅓	10,260	+ 1,735
Lanarkshire	„ 25	2,845	3,575	+ 730	17	53,671	+ 12,966
Lancashire United ..	„ 24	2,018	2,615	+ 597	17	42,978	+ 12,745
Leeds City	„ 27	10,120	11,411	+ 1,291	4	44,533	+ 6,953
Leicester Corporation ..	„ 27	3,284	4,234	+ 950	..	..	..
Leyton U.D. Council ..	„ 25	1,701	1,766	+ 65	4	7,538	+ 811
Liverpool Corporation ..	„ 20	14,732	16,657	+ 1,925	15⅔	262,493	+ 41,360
Llandudno & Colwyn Bay	„ 19	241	314	+ 73	20	5,308	+ 1,407
London County Council ..	May 1	52,885	57,168	+ 4,283	4⅓	249,079	+ 26,830
Maidstone Corporation ..	Apr. 25	196	237	+ 41	3⅔	1,109	+ 237
Manchester Corporation ..	„ 27	19,502	24,520	+ 5,018	4	93,014	+ 21,064
Nelson Corporation ..	Mar. 16	194	244	+ 50	50	11,869	+ 1,394
Newcastle-on-Tyne Cor.	Apr. 27	7,321	8,831	+ 1,510	4	33,803	+ 7,498
New St. Helens & Dist. ..	„ 24	1,139	1,385	+ 246	43	59,866	+ 13,937
Northampton Cor. ..	„ 26	698	873	+ 175	4	3,401	+ 668
Nottingham Corporation	„ 25	3,894	5,311	+ 1,417	4	18,739	+ 4,698
Oldham Corporation ..	„ 28	2,583	3,315	+ 732	5	15,523	+ 2,539
Portsmouth Corporation	Mar. 10	2,035	2,581	+ 546	..	..	..
Reading Corporation ..	Apr. 25	900	1,170	+ 270	4	4,234	..
Rhondda Tramways ..	„ 18	1,427	1,560	+ 133	16	25,274	+ 4,557
Rotherham Corporation	May 1	1,686	2,094	+ 408	4⅓	9,307	+ 1,685
Sheffield Corporation ..	Apr. 28	11,355	13,637	+ 2,282	4⅔	63,733	+ 9,757
Southampton Cor. ..	„ 24	1,721	2,344	+ 623	3⅔	8,239	+ 2,212
Southend-on-Sea Cor. ..	„ 24	709	677	— 32	4	2,529	+ 85
South Shields Cor. ..	„ 20	812	1,010	+ 197	3	3,109	+ 731
Sunderland Corporation ..	„ 28	1,610	2,069	+ 459	4	8,269	+ 770
Sunderland District ..	„ 24	672	886	+ 214	25	21,269	+ 5,674
Swindon Corporation	„ 24	237	279	+ 42	3⅓	1,088	+ 281
Torquay Tramways ..	„ 18	530	704	+ 174	16	10,878	+ 3,609
Tyneside Trys. & Trmrds.	„ 10	779	909	+ 129	15	12,441	+ 3,392
Wallasey Corporation	„ 27	1,315	1,615	+ 300	3⅔	6,282	+ 1,151
Walsall Corporation ..	„ 27	835	1,114	+ 279	4	4,570	+ 1,050
Walthamstow U.D. Coun.	„ 27	1,115	1,217	+ 102	4	4,830	+ 822
Warrington Corporation	„ 18	475	719	+ 244	3	1,863	+ 618
West Ham Corporation	„ 25	3,388	3,781	+ 392	3⅓	13,879	+ 1,636
Wigan Corporation ..	„ 26	1,753	2,312	+ 559	4	8,623	+ 2,206
Yorkshire (West Riding)	„ 28	1,976	2,705	+ 729	17	40,745	+ 9,395

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Blackpool, Blackpool & Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Dublin United, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Newport (Mon.), Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	Apr. 29	£49,844	£57,721	17	£937,674	+ £69,619
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Feb. 24	3,196	3,902	48	40,644	+ 1,316
Brazilian Traction (Mlrs.)	Mar.	7,549,000	8,094,000	13	23,246,000	+ 1,559,000
Brisbane	Mar.	33,340	35,530	13	102,039	+ 5,879
British Columbia .. $	Feb.	451,679	501,150	34	3,984,379	+ 374,000
Buenos Aires Lacroze ..	Mar.	41,337	42,647	39	346,421	+ 69
Burmah Tram. & Light Rs.	Mar.	27,132	27,906	34	212,142	+ 991
Calcutta .. .. Rs.	Apr. 27	65,034	72,339	17	1,204,167	+ 72,121
Cape Town	Mar.	17,688	19,911	..	..	..
Carthagena and Herrerias	Apr.	4,366	4,200	17	17,558	+ 3,032
Cordoba	Feb.	11,896	12,972	47	147,938	+ 435
East India	Mar.	1,647	1,729	35	10,496	— 5,744
Hong Kong .. .. $	Mar. 9	12,289	12,996	10	141,396	+ 2,377
Kalgoorlie	Dec.	2,894	3,044	52	32,608	+ 1,176
La Plata	Mar.	4,523	5,347	13	4,803	+ 1,867
Lima	Mar.	37,584	42,106	13	127,555	+ 18,900
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Apr. 15	38,708	40,805	15	277,813	+ 34,666
Manaos .. .. Rs.	Jan.	146,493	151,871	..	..	..
Manila (8 weeks) .. $	Feb. 28	73,200	93,000	8	93,000	+ 19,800
Montevideo	Mar.	31,979	36,659	21	172,333	+ 14,941
Pernambuco	Apr. 28	3,792	4,388	17	78,325	+ 17,489
Peruvian .. .. $	Mar.	1,017,000	1,119,530	39	9,322,560	+ 1,020,168
Port Elizabeth	Mar.	4,428	4,425	..	..	..
Rangoon	Mar.	6,226	5,955	13	16,978	+ 1,514
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Feb. 23	12,963	13,670	8	104,652	— 1,821
Toronto .. .. $	Feb.	932,567	981,933	8	2,059,252	+ 115,216
Winnipeg .. .. $	Feb.	230,717	298,899	8	633,541	+ 32,879

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Para Electric Railways and Lighting Co.—In the absence of Mr. Follett Holt, who is abroad on urgent work of national importance, Mr. F. M. Voules presided at the annual meeting. Referring to the delay in holding the meeting, he said it was due to the difficulty of communication with Para, but as the results of the financial year warranted such a course, the directors had decided to pay further interim dividends on both classes of shares. The report had since come to hand. The ordinary dividend of 7 per cent. constituted an advance of 1 per cent. over last year's rate. As a director of the company since its inception, it was a matter of special gratification to him to see the sound basis on which the company was now established. It reflected the greatest credit on their local managers and on their London managers, Messrs. J. G. White and Company, Ltd. The Company's business showed an encouraging development both in the tramway and the lighting departments, the net receipts in local currency in both departments constituting a record. The number of passengers carried was over twenty-two millions and the sale of electric current for motive and lighting power was 10 per cent. higher than in 1916. A further economy had been obtained in operating expenses, notwithstanding the special difficulties incident to the war. In the circumstances the company's cash position was satisfactory. They had invested £25,000 in war loan and £20,000 in war bonds. They had abundant proofs that the Government and the municipal authorities appreciated the company's untiring efforts to serve the community.

Kilmarnock Tramways.—In his report for the year ended May 15, 1917, Mr. W. C. Bexon says that the gross profit was £1,151, as compared with £1,019 for the previous year. After paying interest and sinking fund and allowing £1,160 for depreciation, the result is a net deficit of £3,163. The traffic receipts per car mile are 9·228d., as against 7·726d. last year, but owing to the increased cost per car mile, the final results are a little worse than last year. The operating costs of 8·073d. per car mile cannot be considered high; in fact, they compare favourably with some other undertakings, but what is required to make the tramways a success is to get higher receipts per car mile. The tramways system has not sufficient scope to be made a paying proposition, and in addition the ½d. fare is a real drawback to the scheme being a financial success. Practically the whole of the tramway undertakings in the British Isles—except two or three of the large cities—have had to dispense with ½d. fares. Mr. Bexon remarks that he has occasionally suggested to the committee that the scheme should be revised, and that ½d. fares should be abolished altogether. When this is done he thinks the tramway results will prove more satisfactory. The track is in a very bad condition at present and extensive repairs have been required owing to loose joints and corrugated rails. The permanent way will have to be completely overhauled when the war is over. The tramway department has been seriously affected by the shortage of staff. Practically all of the motormen and conductors in the employment of the department before the war have joined the Forces or are working in munition factories, and female drivers and conductors have had to be employed.

PERSONAL.

Mr. A. R. Carter, assistant borough surveyor of Blackpool, has been appointed temporary acting surveyor at a salary of £400 a year.

Sir Charles Stewart Wilson, K.C.I.E., has been appointed a director of the Bengal-Nagpur Railway, in succession to the late Mr. Alexander H. Campbell.

Mr. W. H. Wilson has been appointed secretary of the London Electric Supply Corporation, Ltd., in succession to Mr. H. C. Carter, who has retired owing to ill-health. Mr. Wilson has been connected with the company since 1906.

Wanted.—Copies of the TRAMWAY AND RAILWAY WORLD, Volume XXXIX, No. 1 (January 1, 1916), to complete files for binding.—Reply to Box, 24, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

South Met. Tramways

RETAIN YOUR TICKET.

1.—Your tramway ticket is a token that you have paid your fare.

2.—Owing to the crowding of the cars it is often impossible to check the tickets en route, so they will be checked as passengers de-tram.

3.—Passengers who cannot produce their ticket will be treated as not having paid, and must pay the fare legally demandable.

4.—If your ticket is not collected, please place in the box provided, to be re-pulped.

TRAMWAY TRACK CONSTRUCTION AND MAINTENANCE.

By R. BICKERSTAFFE HOLT,

Highways and Permanent Way Engineer, City of Leeds.

CONTENTS:

FOREWORD.
What's wrong with the Track?"

CHAPTER I.—CONCRETE FOUNDATIONS.
Defects—Causes of fracture—Method of laying concrete.

CHAPTER II.—CONCRETE MATERIALS.
Road metal—Water-gravel—Sand—Clinker-sand—Trass.

CHAPTER III.—REPAIRS TO CONCRETE FOUNDATIONS.
Patching—Partial repairs—Complete renewal.

CHAPTER IV.—TRACK DESIGN.
"Follow my leader" policy—Importance of local conditions—Effect on sub-soil—Standard methods—Transverse sleeper tracks—Effect of vehicular traffic and tramway car traffic.

CHAPTER V.—RAIL PACKING.
Pitch and tar packing—Materials—Testing and preparation of materials—Prepared tar—Pitch mixtures—Movement of rails—Packing and floating.

CHAPTER VI.—RAIL LAYING.
Bad rail packing—Rails canted or twisted—Anchoring and Padding—Rail expansion and contraction—Curving of rails—Springing of rails—Anchoring tracks.

CHAPTER VII.—JOINTS, FISH PLATES, BOLTS AND NUTS
Why joints fail—Dished or hammered joints—Movement at joints.

CHAPTER VIII.—JOINT WELDING.
Methods of welding—Thermit welding—Electric arc welding process—Expansion and contraction—Oxy-acetylene process.

CHAPTER IX.—RAIL WEAR.
At joints—On new tracks—On steep gradients—On wheel tires—Contact of wheel and tire—Leeds special rail section—Railway rails—Depression of check.

CHAPTER X.—COMPOSITION AND MANUFACTURE OF TRAMWAY RAILS AND RAIL WEAR.
Defective rails—Composition of rails—Standard specification—Basic and acid Bessemer process—Sandberg process—Analysis of rails and rail tests—Drop test unnecessary.

CHAPTER XI.—CORROSION OF TRAMWAY RAILS.
Causes of rail corrosion—Exposure to sea water—Effect of corrosive liquid.

CHAPTER XII.—TRACK PAVING.
Effect of vehicular traffic—Cause of loose rails—Importance of quality in setts—Square-dressed setts—Nidged granite setts—Bonawe granite setts—Wood paving—Bedding of setts—Laying and ramming.

CHAPTER XIII.—RECONSTRUCTION.
Removal of tracks—Temporary tracks.

CHAPTER XIV.—SURFACE DRAINAGE AND RAIL MAINTENANCE.
Rail cleaning—Rail grinding—Rail planing.

CHAPTER XV.—SPECIAL TRACK WORK.
Design and standardisation of points—Unbroken main line crossings—Renewable plates—Switches—Mechanism for movable points—Heel pins—Tongue heel adjusters—Guard rails—Spiral tables for curves and junctions—Special track problems.

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THE

Tramway & Railway World

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NOTICES.

All Communications an Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

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WEEKLY LIST OF TENDERS INVITED.

COUNTY BOROUGH OF SUNDERLAND.

Water Tube Boilers.

The Corporation are prepared to receive Tenders for the supply and erection at their Electricity Works of two Water Tube Boilers, with Integral Superheaters, Mechanical Stokers, Vertical Cast-iron Tube Economisers, Steel-plate Chimneys, etc., etc.

Specification and form of tender may be had on application to the General Manager, Mr. Alfred S. Blackman, Electricity Offices, Dunning Street, Sunderland, upon payment of a deposit of £1, which will be returned only after a bona-fide tender has been opened.

Tenders, endorsed "Electricity Works Boilers," and addressed to the undersigned at the Town Hall, Sunderland, to be delivered not later than the first post on Wednesday, May 29.

The Corporation do not bind themselves to accept the lowest or any tender.

H. CRAVEN,
Town Clerk.

Town Hall, Sunderland.
May 6, 1918.

COUNTY BOROUGH OF WARRINGTON.

Electricity Department.

The Electricity and Tramways Committee of the County Borough of Warrington invite Tenders for the following:—

1. Motors.
2. Transformers.

Specifications and Form of Tender can be obtained from the undersigned on payment of one guinea for each specification, which will be returned on receipt of a bona-fide Tender.

Five Shillings will be charged for extra copies of either specification.

Tenders, addressed to the "Chairman of the Electricity and Tramways Committee, Town Hall, Warrington," must be sealed with wax, and endorsed "Tender for Motors," or "Tender for Transformers," as the case may be, and delivered not later than 12 o'clock noon, on Wednesday, May 22nd, 1918.

The lowest or any tender will not necessarily be accepted.

F. V. L. MATHIAS, M.I.E.E.,
Borough Electrical and Tramways Engineer.

Howley, Warrington.

ISLINGTON BOROUGH COUNCIL.

The Lighting Committee of the Islington Borough Council invite Tenders for the supply and erection of Machinery and Plant, viz.:

(a) 5,000-KW. Steam Turbine, Alternator, Exciter, Condensing Plant, Switchgear, Piping, etc.
(b) Water-tube Boilers, Coal Conveyor, Telpher, Burners, Steam Piping, and other Accessories.

Specification, General Conditions, and Form of Tender may be obtained on application to the Electrical Engineer, 50, Eden Grove, Holloway, N.7, on or after April 29th, 1918. A deposit of £2 2s. will be required, which will be returned on receipt of a *bona-fide* Tender.

Tenders, under seal, and endorsed on the outside "Tender for Electric Lighting Plant," to be addressed to the undersigned, and delivered at the Town Hall, Upper Street, Islington, N.1, not later than noon, Friday, May 24th, 1918.

(By order) C. G. E. FLETCHER,
Town Clerk.

Town Hall, Upper Street, N.1.
April 12th, 1918.

POSITIONS VACANT.

COUNTY BOROUGH OF SUNDERLAND.

Wanted immediately, Engineer with modern Central Station steam and electrical experience, to take charge of seven eight-hour shifts per week.

Commencing salary, including all bonuses to date, at the rate of £200 per annum, rising to £225 per annum upon the completion of six months' satisfactory service.

Apply in own handwriting, enclosing copies of recent testimonials, and stating how soon after appointment duties could be taken up, to—

ALFRED S. BLACKMAN,
Engineer and General Manager.

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Dunning Street, Sunderland.

CHARGE ENGINEER.

Charge Engineer wanted for combined A.C. and D.C. Station.—Apply, stating experience, with copies of testimonials and salary required, to

BOROUGH ELECTRICAL ENGINEER,
Electricity Works, Dover.

CAR SHED SUPERINTENDENT.

Applications are invited for the position of Car Shed Superintendent. State age, experience, and salary expected, with copies of testimonials to TRAMWAY MANAGER, Dumbarton.

TRAMWAY ASSISTANT.

Wanted, Assistant to take charge of Overhead Trolley Line repairs, including street pole lighting, also supervision of permanent way staff. State age, experience, and salary required, TRAMWAY MANAGER, Tramway Office, Dumbarton.

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The Plant is in good working condition, and can be seen by appointment.

If necessary, arrangements could be made for the Corporation's Staff to carry out the dismantling.

Full particulars can be obtained from Mr. F. L. OGDEN, Joint Engineer and Manager, Electricity Works, Greenhill, Oldham.

The highest or any tender not necessarily accepted.

J. H. HALLSWORTH,
Town Clerk.

Town Hall, Oldham.
April 29th, 1918.

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THE
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SATURDAY, MAY 11, 1918.

INCREASED FARES IN LONDON.

WITH the exception of Glasgow and Liverpool the London County Council Tramways are the last among the large cities to effect a revision of stages and fares. Considering that the undertaking has, on account of adverse circumstances, been obliged to draw upon its reserve fund in order to meet statutory charges, it is surprising that the Highways Committee did not recommend the Council to take their present action a year ago, when a milder revision was made. On May 22 last the increased cost of operation was responsible for the abolition of halfpenny fares and of ordinary return tickets. At the same time, ordinary passengers were called upon to forgo the reduction of a penny that had been made on two-journey tickets to counteract omnibus rivalry. Combined with increased traffic due to the war, those alterations increased the revenue for the year ended March 25 last by £396,889 on a turnover of £2,865,311. In view of the recent increase of the war bonus to £1 a week, involving an annual charge of £113,000, and the prospect of a rise in operating costs of nearly £92,000 for the current year, further revenue has become imperative. The general manager estimates that about £125,000 additional will be required for renewals, making £330,000 to be raised from increased fares if a call upon the rates is to be averted. Expressed in car-mile cost the working expenses are estimated at 10.98d per car-mile, excluding £120,000 for war service allowances, as compared with 8·22d for 1916-17 and 6·47d. for the last pre-war year. These demands do not complete the list of possible adverse conditions. Owing to the likelihood of further demands for military service and the restrictions on the use of coal, it is not unlikely that the earning capacity may be reduced. Upon the foregoing considerations it must be admitted that the scheme presented by the general manager imposes the minimum additional impost upon the passengers. Two schemes appear to have been submitted in Committee, the other (of which no particulars were given) being described as far more drastic. The Committee intimate, however, that the adopted proposals are based upon the assumption that present car mileage will be maintained ; any considerable reduction in mileage or other unforeseen changes may involve further modifications. The present revision amounts to an addition of one penny to ordinary 1d., 2d., and 3d. fares, while 1½d., and 2½d. charges are suspended. As to workpeople, the 1d. formerly charged for a full route will now frank only four stages, the complete journey costing 2d. Hitherto the latter sum has covered the return ride also. It will now cover a four-stage return journey only, while the return fare on each service will be 3d. While it is to be regretted that ordinary passengers have to be deprived of the transfer ticket, its suspension, combined with the revision of stages, will enable the ticket system to be simplified, with resultant saving and improved fare collection. It is hoped to effect a saving of 100 tons of tickets for the current financial year besides reducing the checking staff. The moderate alterations in workpeople's fares ought to become permanent, especially as Mr. Gosling, the labour leader, stated that in these days workmen did not want the concessions hitherto given. Moreover, he hinted that the bonus to employees will have to be made permanent. The only alternative offered by critics consisted of suggestions that the sinking fund contribution should be suspended and that the war allowances should be charged on the rates. Mr. G. H. Hume in moving the adoption of the proposals made it clear that the Committee were determined that the tramways shall be self-supporting and that they could not agree to any alteration in the plans. The Council wisely endorsed the Committee's policy and it may be hoped that the undertaking will eventually become a thoroughly sound business.

LONDON UNDERGROUND RAILWAYS.

OPENING OF A NEW CLUB AND INSTITUTE.

The management of the London underground railway companies and the London General Omnibus Company have always taken a keen interest in the welfare of their employees. They have over thirty institutes and mess rooms for their administrative and outdoor staffs of the railways and omnibuses, and on Wednesday a new women's institute and club over the Brompton Road station of the Piccadilly Railway were opened by Lady Stanley. Provision has been made for games and there are refreshment, reading, and rest rooms and a spacious hall for concerts, etc., the whole suite being neatly decorated.

At the opening ceremony on Wednesday, Mr. H. E. Blain, operating manager of the associated companies, occupied the chair. Besides Lady Stanley, a number of heads of departments were present including Mr. W. E. Blake, Mr. J. P. Thomas, and Mr. P. V. McMahon. There was a large gathering of the female staff. An agreeable programme of music was furnished by the employees. In the course of the proceedings, Mr. Blain said that so long as their undertakings ran, the name of Stanley would be indissolubly connected with them. In Sir Albert Stanley they had not merely a chief who was respected and one whose work had imprinted itself indelibly on London traffic, but they had a chief whom they loved and whom every member of the staff could always approach without any doubt that the reception would be good. He had much pleasure in asking Lady Stanley to declare the club and institute open. (Applause.)

Lady Stanley said that anything connected with the underground railways, and particularly with the welfare of the staff, always found a warm response from her; and her husband, they knew, had the same sentiments.

She frequently heard very good reports of the work the girls were doing, and she thought their work was splendid. The female uniform and booking staff now numbered 1,260, and it was for them that this institute was intended. She formally declared the institute open and wished it every success. (Applause.)

Mr. Blain, in moving a vote of thanks to Lady Stanley, said that there were five mess rooms and institutes connected with the underground railways, but this was the first specially devoted to the female uniform staff. They were much indebted to Mr. Knapp for the way in which the decorations had been carried out. He was told that the members intended to make very definite use of the rooms as a club.

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Among the projects were a musical society, a dramatic society, the transfer from the Albert Stanley Institute to these quarters of the first-aid classes and the establishment of a dressmaking and sewing circle, as well as an athletic side for gymnastic exercises. The institute rooms were free, and open to every woman member of the staff, without subscription, and the refreshments would be served at absolutely net cost. There could be no better outcome of buildings of this description than to improve healthy *esprit de corps* among the members and the staff. They would realise the magnitude of the social side of the work when he said that last year the underground railways' mess-rooms had 1,000,000 transactions over their counters, the omnibus mess-rooms 3,500,000, and the Penywern Road Club 70,000. The cash receipts were no less than £62,000. In itself that would be regarded as a big catering business, but with the companies it was merely a side show.

Mr. Blake supported the vote of thanks which was heartily accorded.

INCREASES IN L.C.C. TRAMWAY FARES.

At the meeting of the London County Council on Tuesday, recommendations made by the Highways Committee for fare revision were approved. When advising the suspension of half-penny fares and ordinary return fares on May 22, 1917, the Committee referred to the abnormal and adverse conditions at that time, and the difficulty has since been accentuated. The recent increase in the wages of employees in the traffic section would entail additional expenditure of about £113,000 in the current financial year. Every effort has been made to maintain the undertaking on a sound financial basis, but the adverse conditions have now become so pronounced that notwithstanding improved revenue resulting from changes already made, increased receipts must be obtained in order to avoid a heavy charge on the rates. It was estimated that the deficiency for 1918–19 would amount to £205,290, without making provision for renewals, and the general manager advised that approximately £125,000 would have to be spent during the year on urgent renewal work. It was, therefore, necessary to provide a sum of approximately £330,290 in addition to the revenue. The working expenses were estimated for the current financial year at 10·98d. a car mile (as compared with 8·22d. in 1916–17, and 6·47d. in 1913–14), apart from the payment of war service allowances amounting to £120,000. Under the circumstances it had become the principal concern of the Committee to avoid a charge on the rates. To meet the great increase in working costs the Committee advised the following revision of fares :—

1. Revision of 1d., 2d. and 3d. fares.—The average length of the 1d. stage should be reduced from approximately two miles to 1·8 mile. The stages should be divided, as at present in most cases, into three sections. The maximum fare for a continuous journey on one car should be 4d.
2. Suspension of 1½d. and 2½d. fares.
3. Suspension of ordinary transfer fares.
4. Suspension of children's reduced fares.
5. Revision of workmen's fares. Single tickets to be issued at 1d. for four consecutive sections on one car, and at 2d. for any distance on one car with transfers as now given for 1d. single. Return tickets to be issued at 2d. for a journey in each direction over four consecutive sections on one car; both journeys to be made over the same sections. (The average distance that a 1d. single workman passenger could travel would be 2·4 miles, or 4·8 miles for 2d. return).

Return tickets to be issued at 3d. for any distance on one car, with transfers as now given for 2d. return. The availability of return tickets to remain unaltered. The present division of the Woolwich route into sections will be retained, so that passengers now paying 2d. would pay 3d. and passengers now paying 4d. would pay 6d.

The Committee stated that the foregoing proposals were based on those of the general manager. He advised that proposals made under present conditions must not be taken to imply a change of opinion as to the principles which should be adopted in the best interests of the undertaking in normal times. Additional traffic could not now be carried on the inner sections during the busy hours, and opportunities for increasing traffic were very restricted. The proposals were made on the assumption that the present car mileage would be approximately maintained, and any considerable reduction in mileage, or other changes which could not be foreseen, might render further modifications necessary.

By the suspension of the existing fare rating as regards 1d., 2d., and 3d. ordinary fares, and the adoption of a reduced average length for the 1d. fare stage (1·8 mile instead of 2 miles), upon which reduced 2d. and 3d. fare stages would be based, a substantial additional revenue was anticipated. The reduction of the average 1d. fare stage would effect, principally, some of the longer fare stages in the central parts of the southern system; but, in its general application, the alteration would entail the minimum of inconvenience to passengers, as traffic points occur in London usually at intervals of half-a-mile or slightly over. Practically all the customary traffic points being retained.

By the suspension of 1½d. and 2½d. fares a substantial additional revenue was anticipated, as well as simplification of the ticket system. By the suspension of transfers a substantial additional revenue was also anticipated, as well as a further simplification of the system. The transfer ticket was a concession, the value of which to the passengers, and to the undertaking under normal conditions, was fully appreciated by the Committee; and, as is well-known, they had made every effort, when the undertaking was working under normal conditions, to extend this concession as far as possible. The Committee greatly regretted therefore the necessity for advising the withdrawal of this concession, a course forced upon them by present circumstances. It would not in their opinion be equitable to seek, by additional charges on other passenger groups, the revenue estimated to be available under present conditions on the withdrawal of transfer tickets. Moreover, the simplification of the ticket system which would result from the suspension of transfer tickets would be considerable, and the altered fares could be brought into operation much more quickly without transfer tickets. It was urgently necessary, so that the required additional revenue for the current year may be realised, to bring the fare alterations into operation at the earliest possible date.

By the suspension of reduced rate tickets for children a substantial additional revenue was anticipated, as well as simplification of the ticket system. Under pre-war conditions the concession of reduced rate tickets to children under 14 was made owing to the probability that the tickets would be used principally at times other than those of maximum load, but war conditions had considerably increased the numbers of juveniles in employment travelling at times of heaviest load. It is submitted that owing to the high wages now commanded by juveniles and the large numbers employed as messengers, whose travelling expenses are paid by their employers, payment of ordinary fares for children will be equitable, particularly in view of the fact that children travelling at times of maximum load displace, in effect, an equal number of full-fare paying passengers. It was not proposed to disturb the arrangement for issuing to the Education Committee tokens at face value for the use of children.

REVISION OF WORKMEN'S FARES.

By the suspension of the existing fare rating as regards workmen's fares and the adoption of the proposals now submitted, a substantial additional revenue is anticipated. The Committee felt that the Council, and the large proportion of tramway passengers who have availed themselves of the very cheap travelling which, by means of workmen s fares, has been afforded on the tramways, would appreciate that it was impossible to continue to afford these travelling facilities at present fares, and that it would be inequitable to attempt to place—indeed, in their judgment it would be impossible to place—on ordinary fare-paying passengers alone the great additional burdens which can be met only by additional contributions from passengers. The proportionate increase in workmen's fares, taken as a whole, was, however, less than that made in ordinary fares.

SIMPLIFICATION OF THE TICKET SYSTEM.

Revision of fares affords opportunities, of which full advantage has been taken in connection with the proposals now submitted, of simplifying the ticket system, with resultant savings in working costs and improved fare collection. The savings in working costs would occur both as regards material and clerical labour. Except on through-running services the maximum number of different kinds of tickets to be used on any one service will be 8, in place of the number, 11 or 12, in use at present. As regards tickets, it is hoped that it would now be possible to adopt a standard size, viz., that of the smallest ticket now in use. A saving in pulp of over 100 tons for the current financial year, as compared with last year, was anticipated; and smaller way bills would be issued to conductors, a large saving in paper being thereby effected. Apart from the value of pulp and paper which will thus be saved, it is important that economy should be effected in both these materials, which are in short supply. The simplification of the ticket system would also greatly reduce the work of checking and recording tickets, so that it will be possible to effect reductions in staff. As a consequence of ticket simplification under the proposals, conductors, of whom a large proportion are women, would be enabled to discharge their duties with greater efficiency. The leakage, to some extent inevitable, in fare collection should, therefore, be reduced, with a consequent improvement in revenue. The economies in working costs, and the increased revenue from improved fare collection, were estimated to represent about £40,000 a year, equivalent to about 12 per cent. of the estimated additional requirements for the current year to be met under the proposals now submitted.

INCIDENCE OF THE ADDITIONAL BURDEN.

In settling the proposals it had been the Committee's endeavour to make within practical limits an equitable distribution of the additional burden among the various groups of passengers. Consideration of the position of the tramways undertaking in relation to other passenger-carrying undertakings providing, to a considerable extent, alternative means of travel, makes it impossible consistently with the necessity for improving the revenue of the tramway undertaking to adopt the method, open to undertakings differently situated, of increasing all fares in strict proportion.

FINANCIAL BEARINGS OF PROPOSALS.

The general manager advised that the increased revenue to be anticipated from the proposed fare changes and the savings and additional revenue which should result from the simplification of the ticket system could be expected to meet the deficiency balance and the cost of urgent renewals, referred to above, in the current financial year, provided that the changes are brought into operation at an early date. Should the results now sought fail to be realised, or should unforeseen circumstances make it imperative for additional revenue to be provided, it would be necessary to submit further proposals with the object of balancing revenue and expenditure.

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All the proposals now submitted were made as a matter of necessity, arising from the high working costs under abnormal conditions. As in the case of previous proposals for increasing the revenue under the compulsion of war conditions, the Committee had no desire to prejudge any questions which, in relation to fare changes or restrictions, would arise under normal conditions; and their proposals are submitted, as in previous cases, as suspensions of normal arrangements.

Mr. G. H. Hume, chairman of the Highways Committee, in moving the adoption of the proposals, said that the revisions were a grim necessity—the Council must accept them or reject them as a whole. He could not agree to any alteration or amendment—the Committee were bound to find the money to meet the prospective deficit of £205,000; and to relieve labour they had so far as possible sought to simplify the fares. Except on one point, the Committee were unanimous, and he explained that the scheme now submitted was a modification of the scheme submitted by the officials.

A long debate took place, and all the resolutions were finally adopted.

REDUCTION IN CAR SERVICES.

Belfast Corporation at their quarterly meeting on May 1 considered the recommendation of the Tramways Committee for the restriction of services to effect economy in coal supplies. Councillor G. W. Turner, chairman of the Tramways Committee, said that matters had become worse since the first announcement of the 25 per cent. reduction of one million tons per annum in the coal imports to Ireland, as in addition to the withdrawal of shipping, the recent order calling up 50,000 miners from the collieries in Great Britain would result in a greater diminution. It was unpleasant for the Committee to curtail the present facilities, but they deemed it advisable to warn the public that further alterations would be inevitable. It is estimated that the proposed reduction in the services will result in the saving of 40 tons per week.

The Lancashire, Cheshire and North Wales Area Sub-Committee of the Tramways (Board of Trade) Committee have appointed a sub-committee to report as to what reductions can be made in the services of the various undertakings included in the area. Owing to the large amount of Admiralty and other Government work in a number of the towns, it will be difficult to secure much reduction in the services. At Birkenhead the service will cease half an hour earlier at night and it is possible that some other arrangements will be made at Liverpool, but it is not expected that there will be any further interference with the present services.

Bournemouth Corporation have discontinued their Sunday services and the week-day schedule is being curtailed. Alluding to the inconvenience which the reduction will entail, the *Bournemouth Directory* says that "when the appeal was made for silver bullets, Bournemouth made a magnificent response. It must not be less patriotic now that the appeal is of a different character, though equally essential to the great purpose by which alone civilisation can be saved from overwhelming catastrophe."

The London United Tramways Company are making various curtailments in their services. Commencing on Sunday, May 12, the Sunday morning services will be discontinued, no cars being run until about 2 o'clock in the afternoon. On week-days and Sundays the last cars will be timed to run about three-quarters of an hour earlier than at present. From Monday till Friday between 10 and 4 o'clock the services will be slightly reduced, but there will be no reduction during the busy hours.

Torquay Tramways Company, in order to comply with the new regulations to cut down the service by 15 per cent., which will involve a reduction of 300 car miles per day, have made various reductions in the car services, and the Sunday services have been discontinued.

West Hartlepool Council have approved a reduction of the tramway service, by which all cars will cease to run after 10 p.m., while the cars on Sundays will not begin to run until 1.30. Privilege fares to members of H.M. Forces during week ends will be discontinued.

Blackpool Tramways Committee have decided that no cars should be run on Sundays before 2 p.m., and the Blackpool and Fleetwood Tramroad Company are making a similar arrangement.

Services on the Croydon Corporation tramways have been reduced. The last cars will leave the Croydon depot at 9.30 p.m., and from some other points the cars leave at 9 o clock.

Sunderland Corporation Tramways Committee have recommended the entire suspension of the Sunday services.

Plymouth Tramways department have ceased their services earlier in the evening.

BELFAST TRAMWAY EMPLOYEES' WAGES.

At a meeting of the Belfast Town Council on May 1, Councillor G. W. Turner, chairman of the Tramways Committee, said that they had held over the consideration of the award of the Committee on Production until they had communicated with the War Cabinet. It would be practically illegal to pay the award owing to the Aberdeen clause, and the Committee were asking the War Cabinet to suggest a way out of the difficulty. The War Cabinet had appointed a Select Committee to deal with such matters, and the case was to come before it. The Tramways Committee, however, had no desire to shirk their obligation to the men.

SELECT COMMITTEE ON TRAMWAY FARES.

Mr. C. J. Spencer, general manager of Bradford Corporation tramways, in giving evidence before the Select Committee of the House of Commons on Statutory Tramways Fares, said that the cost of tramway operation had increased enormously, and almost all tramway undertakings were now having to reconsider their financial position. The general manager of the Leeds Corporation tramways estimated that unless fares at Leeds were increased, there would be a deficit of £45,000 for the current year. The main cause for the increased expenditure on tramways had been the increased cost of labour. The wage bill of tramway undertakings had been increased approximately 70 per cent., and in some cases even 100 per cent. The application now under consideration for a 12½ per cent. bonus on present rates would, if granted, mean another considerable increase in cost.

In munition centres there had been a considerable increase in the number of passengers, with a consequent increase of receipts, but expenditure was now increasing more rapidly than revenue. There was also another disquieting feature in the situation. The Board of Trade had already intimated to tramway authorities that in consequence of war-time circumstances it would be necessary to curtail car mileage. While this would reduce certain expenditure it did not affect standing charges.

The present scale of tolls and charges for the carriage of parcel and goods was so obviously out-of-date that it was impossible to extend the conveyance of parcels and goods without considerable loss to the undertakings. It was suggested by witness that power be given to the Board of Trade to set aside the statutory limitations of tolls and charges in respect of passengers' parcels and goods for the period of the war in cases where they were satisfied that sufficient reason existed.

INCREASED TRAMWAY FARES.

The subject of increased tramway fares was discussed at some length at the meeting of the Leeds City Council last week. The Tramways Committee proposed to increase the fares on the basis of one mile for a penny and two miles for three-halfpence, roughly an increase of 50 per cent., and to abolish halfpenny fares on the first two halfpenny stages from the centre of the city. Alderman R. A. Smithson, Chairman of the Tramways Committee, in moving the adoption of the recommendations, said that about two- and three-quarter millions of passengers were being carried weekly. The costs were increasing, labour alone accounting for £90,500 more in the tramways accounts this year than in the year before the war. In addition, £12,000 was being paid to the dependants of tramway workers in service. Materials for repairs and renewals had largely increased. It might be argued that the increases were largely met by the increase in receipts to the extent of £79,000, but that could scarcely be expected to be maintained in view of the necessity for a restricted service. Moreover, it was estimated that during the next five years they ought to set aside a sum of £80,000 annually to meet the necessary cost of renewals, instead of £30,000 which was estimated for on that account in the last budget. Instead of £58,000 which the Council approved to be taken from this year's tramway profits in relief of the rates, they could not hope in the most favourable circumstances to provide more than £11,000. That deficiency, together with the deficiency on the renewals account, made a total deficiency of £97,000, even assuming that there would be no further increase in the expenses of the undertaking. Whether anything was taken for the relief of rates or not, there was an immediate necessity for an increase in fares. They would like to have abolished halfpenny fares altogether, as it would have simplified the system, but the Committee had agreed as a compromise that they would endeavour to retain the halfpenny fares on the outskirts where the conductors would be in a better position to collect them. It was the intention of the Committee to give two miles for three-halfpence. Alderman H. Brown, vice-chairman of the Tramways Committee, agreed that the fares must be increased. He thought the proportion of the profits to be taken in relief of the rates recommended by the Committee was reasonable, as it would yield between £50,000 and £60,000 a year, and he asked for a pledge that the moment they could provide for the renewal of the permanent way they would revert to the pre-war rates. Alderman C. H. Wilson said he regarded the revision of fares as a war measure, and as early as possible he hoped they might be readjusted on a pre-war basis or something approaching it. He was prepared to accept a moderate limitation of profits. Parliament, through the Electric Lighting Clauses Act, 1899, had fixed the percentage which could be taken from the electric lighting undertaking at 5 per cent. He was prepared to work on that principle, and 5 per cent. on the tramways would give approximately £90,000. The 50 per cent. increase in tramway fares he contended was amply justified. The Tramway Committee's proposals were adopted.

The Hull Tramway Committee have had before them the question of fares, in view of the serious burden of expenses which has lately been cast upon them as well as upon other Systems. The chairman (Councillor Hakes), deputy-chairman (Councillor Raine, J.P.), and tramway manager (Mr. W. J. McCombe) presented a report in which they recommended that the fares remain as at present. The Chairman and Deputy-Chairman stated that the whole question had been gone into with the utmost care and thoroughness, and the conclusion had been arrived at that it will be undesirable and unnecessary to increase the fares at the present time. As a result the report was accepted. The whole matter is, of course, subject to review in the future.

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Dundee Town Council has approved the recommendation of the Tramways Committee to abolish all halfpenny fares for adults, and to make the minimum fare 1d. for any distance up to three consecutive stages on any one section, and 1½d. for a distance exceeding three stages. Mr. G. A. Johnston, the convener of the Tramways Committee, stated that the system of not stopping cars except at fixed stopping places is working well; but it was agreed to revert to the former system until the bye-laws were altered making the new practice legal.

Fares on the Croydon Corporation tramways and the South Metropolitan tramways were increased on May 3.

Burnley Corporation tramway fares will be increased by about 50 per cent. on June 1.

MISCELLANEOUS NEWS AND NOTES.

Trade Parliaments and Their Work.—Mr. Ernest Benn's articles on this subject have been collected, and will shortly be issued in book form by Messrs. Nesbit and Company, at 2s. net.

Railway Signal Superintendents.—The Association of Railway Companies Signal Superintendents and Signal Engineers held their fifty-sixth conference at the Railway Clearing House on May 9.

Collection of Tickets at Leeds.—Passengers on the Leeds tramway cars are being asked to place their tickets in small boxes on leaving the cars. The quantity of tickets used last year was about 124 millions.

New Use for Tramway Profits.—The Committee of the Sheffield City Council in charge of allotments proposes that out of the profits of the tramways £100 should be given for the purchase of prizes to be awarded at an exhibition of produce to the most successful of the 11,830 plot holders.

Galway and Salthill Tramways.—The Town Council of Galway is considering a proposal to take over the Galway and Salthill tramways. This line has been worked by horse traction and the company owning it has recently been wound up. The Council will probably decide to electrify the line.

Increased Cars for Liverpool.—Mr. C. W. Mallins, general manager of the Liverpool Corporation tramways, has reported to the Committee that he has obtained a priority certificate for certain materials which are required to enable him to place four additional cars on the Everton and North Docks route. These cars are wanted for the morning and evening traffic.

Workmen's Fares at Manchester.—The Electrical Trades Union at Manchester has protested against the withdrawal of the workmen's fares. The Trades Council and Labour Representation Committee are to be asked to discuss means of securing the restoration of the fares. The abolition of workmen's fares and halfpenny stages came into force on May 6.

Messina Tramways Reinstalled.—The electric tramway system in Messina (Sicily) has now been reinstalled and set to work, at any rate on the three main trunk routes. Other services will be added as soon as possible to all the principal suburbs and outlying districts, where most of the merchants and employees are forced to live owing to the lack of accommodation in the city itself, which is not even yet rebuilt after the great earthquake.

Traffic Difficulties at Liverpool.—Alderman Russell Taylor, chairman of the Liverpool Tramways and Electricity Committee, at a meeting of the Town Council, called attention to the report of the general manager of the tramways pointing out the difficulties which the undertaking had encountered during the past year. He assured the Council that everything possible was being done to secure a good service, and he asked the passengers not to grumble but "to be thankful that they were being carried at all."

Nationalisation Proposals.—Among the proposals to be considered at the annual conference of the Labour Party to be held on June 26 are the following:—Nationalisation of railways by the expropriation of the present stockholders on equitable terms; a united national service of communications and of transport; the nationalisation of coal mines, and a municipalisation of household coal distribution; and the establishment of State-owned and controlled super-power stations to supply the whole kingdom with electricity.

Permits for Buying Machinery.—The Ministry of Munitions states that power-driven machine tools or woodworking machines and treadle lathes for woodworking or metal (3in. centres and over) come under Regulation 30A of the Defence of the Realm Regulations, and intending purchasers must make applications for permission to purchase the machines they require to the Executive Officer of the Area Clearing House Board in their district. Firms must obtain permission to sell machines from the Controller of Machine Tools, Charing Cross Buildings, Embankment, W.C.2.

The Institution of Automobile Engineers.—With a view to drawing attention to the advantages which the Institution offers to young men who are being trained for the profession of Automobile Engineering, a special meeting of the Institution of Automobile Engineers was held at the works of Messrs. D. Napier & Sons, at Acton, on Friday. Interesting papers were read by the President of the Institution, Lt.-Col. R. K. Bagnall-Wild on "An Examination into the Causes of Failure of Lorry Parts on War Service," and by Mr. Geo. W. Watson on "Tank Engines." Mr. Bruce Ball, General Works manager of the Napier Company presided. The object of the Institution is to encourage those who are being trained to rise above the bench and to reach the higher branches of the profession.

Tramway Car as Travelling Kitchen.—The first travelling national kitchen, a single deck tramway car reconstructed at the Corporation tramway workshops, was put into service at Halifax on April 25. The idea was suggested by Alderman Charles F. Spencer, Director of National Kitchens, who is also chairman of Halifax Tramways Committee. The food is stored on the platform vestibules, the cooking apparatus being fitted within the body of the car. This includes two electric ovens, two steamers, and three hot plates with boiling pans placed at one end; and two steamers, one large boiling pan, and three hot plates with boiling pans are installed at the other end. Water is supplied from a 100-gallon tank placed on the roof over one of the vestibules. Energy for the cooking apparatus is taken from the overhead trolley line at the usual voltage. At the pay-desk, which is placed at one end of the car, the money which purchasers desire to expend in food is exchanged for coupons, and from each side of the car the service is made with great expedition by two attendants. The inauguration of the experiment aroused much interest. Considerable numbers of people, including female workers from factories and men in overalls, met the car at various points, and all came with receptacles for receiving the food which is carried in the car. On the trial trip the following menu was provided: Three-quarters of a pint of soup, 1d.; suet dumpling, 1d.; vegetable pie, 4d.; potatoes, 1d.; rice or ginger pudding, 1½d. If the scheme proves successful, Alderman Spencer expects that it will be taken up in other towns.

PERSONAL.

Mr. R. H. Dyer has been appointed acting borough engineer and surveyor to Southend Corporation, pending the making of a permanent appointment.

Mr. H. Cobden Turner, of the British Westinghouse Electric and Manufacturing Company, has been appointed manager of Salford Electrical Instruments, Ltd.

Mr. George A. Newsome, of the Dumbarton Burgh and County Tramways, has been appointed manager of Darwen Corporation tramways at a salary of £250 per annum.

Mr. E. S. Rayner, at the request of the Doncaster Electricity and Tramways Committee, has been released by the Admiralty, and has resumed his duties as electrical engineer and tramways manager.

Mr. J. N. Wilson has, we understand, resigned the position of secretary to the Tramways (Board of Trade) Committee, and has resumed his duties as secretary to the Glasgow Corporation Tramways.

Sir William Pearce, M.P., has consented to act as Chairman of the Select Committee of the House of Commons, appointed on April 23rd, to consider the question of raising the statutory maxima of tramway fares.

Mr. J. M. McElroy, general manager of Manchester Corporation tramways, has by a new agreement with the Corporation undertaken to retain his position for a period of five years, at a salary of £1,500 per annum.

Mr. P. P. Wheelwright, borough electrical engineer of Blackburn, has been nominated by the Blackburn Corporation at the request of the Controller of Mines to undertake the inspection of works and factories in the locality in connection with economy in coal consumption.

The death of **Herr Arnold Von Siemens,** chairman of Siemens and Halske, occurred on April 29.

Major Algernon George Parsons, R.F.A., the only son of the Hon. Sir Charles A. Parsons, was killed in action on April 26.

CONTRACTS AND ORDERS.

Walthamstow Highways Committee propose to ask the Council's sanction to the purchase of a second-hand steam wagon at a cost not exceeding £800.

Manchester Electricity Committee has accepted the following tenders:—Ferranti, Ltd., two 3,000 k.v.a. three-phase static transformers; W. T. Glover and Company, and the Western Electric Company, supply of cables; Callender's Cable Company, supply and laying of 33,000 volt cables; F. Morton and Company, steel work for 20,000 kw. turbo-generator.

DICK, KERR & Co.,
Limited,
ABCHURCH YARD, CANNON STREET,
LONDON, E.C.,
ENGINEERS & CONTRACTORS.
Complete Equipment
TRAMWAYS & LIGHT RAILWAYS
at home and abroad

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash May 9 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	67½	66½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4¾	56/8	55/-
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4¾	48/9	48/9
4%	4%	Do. 4% Deb.	100	91	65½	66
4½%	4½%	Do. 4½% Deb.	100	98½	67½	66½
5%	5%	Do. 5% Deb.	100	96	63	63½
—	—	Associated Omnibus Co., Ord. ..	5/-		1/2	1/2
7d.	1/-	Auckland Elec. Trams. Ord. ..	1	1 3/32	20/4½	20/3
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	108½	107½
—	1/-	Bath Electric Trams Pref. Ord.	1	¼	3/6	3/6
6d.	6d.	Do. 5% Cum. Pref. ..	1	9/16	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
20/-*	28/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Do. 6% Cum. Pref. ..	10	11½	9 1/16	9 1/16
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	43	42½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	85½	87
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5½	5½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	90½	91½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	34	24½
5%	5%	Do. Pref. Ord.	100	106	41	31½
5%	5%	Do. 5% Cum. Pref. ..	100	103	58½	51
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	83½	83½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	62	59½
£8*	£8*	Brit. Elec. Trac. Ord.	100	—	31½	31
6%	6%	Do. 6% Cum. Part. Pref.	100	—	74	75
5%	5%	Do. 5% Deb.	100	92	76½	77½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	63½	65½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	77½	70
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	7 1/2	6 1/2
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/8	81/3	78/9
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1	¼	13/-	13/-
1/3	1/3	City of B. A. Trams	5	5½	80/-	80/-
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	82	82
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	59½	59½
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7½	7½
6/-	6/-	Do. 6% Pref.	10	12	10½	9½
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/3	1/3
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1	1/16	10/3	10/3
4½%	4½%	Do. 4% Deb.	100	67½	53	53
8½d.	8½d.	Hong Kong Tramway	5/-	1/16	17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80	80½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	½	2/4½	2/4½
9/6	9/6	Lanarkshire Trams Co. ..	10	10½	10 1/16	10 1/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79½
9½d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
--	1½d.	London & Sub. Traction Ord. ..	1	3/32	2/4½	2/4½
6d.	6d.	Do. 5% Pref.	1	1/16	6/-	6/-
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	60	60
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80½	80½
5%	5%	Do. 5% Inc. Deb.	100	88½	76	76
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	38½	38½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	82/6	85/-
5%	5%	Do. 5% Deb.	100	100	84½	84½
7½d.%*	9½d.*	Manaos Trams & Ltg. Ord. ..	1	1/16	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	68	70
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	73½	73½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	69	69
5%	5%	Do. 5% Deb.	100	87	76	80
$1½	$1½	Mexico Trams. Common ..	$100	70	24½	23½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	36½	35½
—	—	Do. 6% Mt. Bds. ..	100	76	29½	30
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	93	85½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	92½	88½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	3/32	17/10½	19/-
9½d.*	9½d.*	New General Traction	1	¼	7/1½	7/1½
8½d.	6d.	Northern Gen. Trans. Ord. ..	1	1/16	12/9½	12/9½
3/-	4/-	Para Elec. Rlys. Ord.	5	4½	78/9	78/-
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	6/9	6/6
—	—	Do. 7% Non. Cm. Part Pf.	1	—	13/7½	14/-
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1	1/16	6/6	6/6
6d.	6d.	Do. 5% Pref.	1	1/16	11/10½	11/10½
8d.	1/4	Provincial Trams. Ord. ..	1	¼	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	87½	87
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	71½	72
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86½	87
5%	5%	Do. 5% Perp. Deb. ..	100	99½	70½	72½
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/6½	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	94	92
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	78	78
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	35/-	35/-
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	69	69
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	¼	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	¼	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	72	72
—	—	Metropolitan Dist. Ord. ..	100	21½	14½	13½
—	—	Undgd. Elec. Rys. of London ..	10	21½	30/7½	30/-
		Do. "A"	1/-	¼	4/6	4/6
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	104	104
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	99	99
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	76½	74½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C. ..	Apr. 30	386	473	+ 87	4	2,157	+ 352
Aberdeen Corporation ..	May 1	1,894	2,284	+ 390	48	104,707	+ 14,607
Ayr Corporation ..	" 4	305	415	+ 110	51	22,614	+ 3,374
Belfast City	" 3	5,900	7,760	+ 1,860	5	37,982	+ 9,328
Birkenhead Corporation ..	" 5	1,765	2,100	+ 335	5	9,947	+ 1,783
Bradford Corporation ..	May 4	7,009	7,437	+ 428	5	37,492	+ 2,826
Burnley Corporation ..	" 4	1,766	2,059	+ 293	..	..	..
Burton-on-Trent Cor. ..	" 5	267	379	+ 112	5	1,910	+ 573
Bury Corporation	" 5	1,559	1,771	+ 212	5	8,612	+ 761
Chatham & District ..	" 2	1,322	1,173	— 149	18	20,270	+ 513
Cork Electric	" 2	585	591	+ 6	18	10,201	+ 1,960
Derby Corporation ..	" 4	1,109	1,397	+ 289	5	6,858	+ 1,526
Dundee City	" 1	1,397	1,621	+ 224	50½	78,854	+ 9,847
East Ham Corporation ..	" 4	1,378	1,401	+ 23	4½	6,359	+ 133
Exeter Corporation ..	Mar. 22	302	373	+ 71	51	20,106	+ 301
Glasgow Corporation ..	May 4	25,915	28,069	+ 2,154	48½	1,291,188	+ 147,700
Glossop (U.E. Sup. Co.) ..	" 4	142	178	+ 36	18	3,211	+ 908
Halifax Corporation ..	Apr. 30	2,140	2,644	+ 504	4½	10,804	+ 1,488
do. Motor Buses ..	" 30	34	55	+ 21	4½	240	+ 40
Huddersfield Corporation	May 4	2,934	3,475	+ 541	5	17,553	+ 1,977
Ilford U.D. Council ..	" 4	709	931	+ 222	5	4,464	+ 1,243
Ipswich Corporation ..	" 4	523	642	+ 109	5	3,190	+ 1,024
Isle of Thanet	" 4	307	199	— 108	31	5,635	— 2,172
Kilmarnock Corporation ..	" 4	169	226	+ 57	50½	10,665	+ 1 861
Lanarkshire	" 2	2,703	3,811	+ 1,108	18	57,482	+ 14,074
Lancashire United ..	" 1	2,070	3,013	+ 943	18	45,991	+ 13,707
Leeds City	" 4	10,527	11,357	+ 830	5	55,890	+ 7,836
Leicester Corporation ..	" 4	3,485	4,389	+ 904	..	..	..
Leyton U.D. Council ..	" 2	1,842	1,901	+ 59	5	9,449	+ 870
Liverpool Corporation ..	Apr. 27	14,971	17,415	+ 2,444	16½	279,968	+ 43,804
Llandudno & Colwyn Bay	" 26	265	332	+ 67	21	5,640	+ 1,474
London County Council ..	May 8	58,626	58,565	+ 4,939	5½	307,651	+ 31,776
Maidstone Corporation ..	" 2	222	242	+ 20	4½	1,351	+ 257
Manchester Corporation ..	" 4	20,285	24,844	+ 4,559	5	117,858	+ 25,800
Newcastle-on-Tyne Cor. ..	" 4	7,451	8,734	+ 1,283	5	42,547	+ 8,775
New St. Helens & Dist. ..	" 1	1,144	1,636	+ 492	44	61,502	+ 14,438
Northampton Cor.	" 3	770	899	+ 129	4	4,301	+ 784
Nottingham Corporation ..	" 2	3,386	5,618	+ 1,632	5	24,357	+ 6,130
Oldham Corporation ..	" 5	2,717	3,419	+ 702	6	18,942	+ 3,241
Reading Corporation ..	Apr. 25	900	1,170	+ 270	4	4,234	..
Rhondda Tramways ..	May 2	1,466	1,720	+ 254	18	23,628	+ 5,041
Rotherham Corporation	" 8	1,703	2,020	+ 317	5½	11,327	+ 2,002
Sheffield Corporation ..	" 5	11,712	13,279	+ 1,567	5½	77,013	+ 11,325
Southampton Cor.	" 1	1,777	2,397	+ 620	4½	10,636	+ 2,832
Southend-on-Sea Cor. ..	Apr. 24	709	677	— 32	4	2,529	+ 85
South Shields Cor. ..	" 20	812	1,010	+ 197	3	3,109	+ 731
Sunderland Corporation..	May 5	1,672	2,034	+ 362	5	10,303	+ 2,132
Sunderland District ..	" 1	685	954	+ 269	26	22,224	+ 5,844
Swindon Corporation ..	" 1	254	321	+ 67	4½	1,310	+ 276
Torquay Tramways ..	" 2	568	810	+ 242	18	12,515	+ 4,053
Tyneside Trys. & Trmrds.	Apr. 24	725	908	+ 183	17	14,221	+ 3,803
Wallasey Corporation ..	May 4	1,435	1,695	+ 260	4½	7,978	+ 1,412
Walsall Corporation ..	Apr. 27	835	1,114	+ 279	4	4,570	+ 1,050
Walthamstow U.D. Coun.	May 4	1,236	1,308	+ 72	5	6,138	+ 901
Warrington Corporation	Apr. 18	475	719	+ 244	3	1,863	+ 618
West Ham Corporation	May 2	3,507	4,009	+ 412	4½	17,889	+ 2,048
Wigan Corporation ..	" 2	1,807	2,319	+ 512	5	10,941	+ 2,727
Yorkshire (West Riding)	" 5	2,124	2,546	+ 422	18	43,291	+ 9,817

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Birmingham, Blackburn, Blackpool, Blackpool and Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Dublin United, Glasgow Subway Co., Hastings, Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Nelson, Newport (Mon.), Portsmouth, Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	May 6	£55,638	£59,028	18	£996,702	+ £73,009
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Feb. 24	3,196	3,902	48	40,644	+ 1,316
Brazilian Traction (Mlrs.)	Mar.	7,549,000	8,094,000	13	23,246,000	+ 1,559,000
Brisbane	Mar.	33,340	35,530	13	102,039	+ 5,879
British Columbia .. $	Mar.	456,626	510,892	39	4,495,271	+ 428,266
Buenos Aires Lacroze ..	Apr.	39,111	41,643	43	388,064	+ 2,601
Burmah Tram. & Light Rs.	Mar.	27,132	27,906	34	212,142	+ 991
Calcutta .. .. Rs.	May 4	67,436	76,018	18	1,280,185	+ 80,703
Cape Town	Mar.	17,688	19,911	..	..	..
Carthagena and Herrerias	Apr.	4,366	4,200	17	17,556	+ 3,032
Cordoba	Feb.	11,896	12,972	47	147,935	+ 435
East India	Apr.	1,445	1,791	39	12,287	— 5,398
Hong Kong .. .. $	Mar. 9	12,289	12,990	10	141,396	+ 2,377
Kalgoorlie	Jan.	2,431	2,522	4	2,522	+ 91
La Plata	Apr.	4,230	5,169	17	19,972	+ 2,807
Lima	Mar.	37,584	42,106	13	127,555	+ 12,900
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Apr. 30	33,945	42,911	17	320,724	+ 43,632
Manaos .. .. Rs.	Jan.	146,493	151,871	..	..	..
Manila (8 weeks) .. $	Feb. 23	73,200	93,000	8	93,000	+ 19,800
Montevideo	Apr.	29,230	33,701	22	206,037	+ 19,415
Pernambuco	May 5	3,612	4,442	22	82,767	+ 18,319
Peruvian .. .. $	Apr.	957,500	1,079,880	43	10,402,440	+ 1,142,548
Port Elizabeth	Mar.	4,428	4,425	..	..	..
Rangoon	Apr.	5,036	5,835	17	22,863	+ 2,363
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Feb. 23	12,963	13,670	8	104,652	— 1,821
Toronto .. .. $	Mar.	991,192	1,113,472	13	3,163,724	+ 227,496
Winnipeg .. .. $	Mar.	293,094	307,289	13	940,830	+ 47,074

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FINANCIAL REPORTS AND MEETINGS.

Chloride Electrical Storage Co.—A dividend of 10 per cent. per annum, free of tax, has been declared on the ordinary shares for the year ended March 31. For the preceding year 10 per cent. was paid, with 100 per cent. script bonus.

Galway and Salthill Tramways.—In a claim by the Galway and Salthill Tramway Company for £354 for loss due to the impressment by the Army authorities of nine of their horses, the Defence of the Realm (Losses) Commission affirmed their inability to give consequential damages.

Associated Omnibus Company.—The accounts of the Associated Omnibus Company for the past twelve months show a net profit of £5,083 after providing for debenture interest and placing £5,500, as against £3,000, to the motor omnibus contingent liability fund. The credit balance brought down is increased to £9,881. In 1916 the net profit was £2,104.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended May 8 amounted to £58,565, an increase of £4,939, as compared with the corresponding period last week. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to May 8 (five and a half weeks), the total receipts were £307,651, an increase of £31,776 on the corresponding period of 1917.

Blackpool Corporation Tramways.—Mr. Charles Furness, the general manager, has reported to the Tramways Committee that the result of the past year's work is a total income of £119,339, as compared with £96,228 for the previous year. The revenue was the highest ever recorded. The working expenses amounted to £68,456, and there is a disposable balance of £31,518, which compares with £21,182 for the previous year. The number of passengers carried was 20,277,535.

Liverpool Corporation Tramways.—The results for the year ended December 31, 1917, compared with those of the four preceding years are as follows:

	1917.	1916.	1915.	1914.	1913.
Capital expenditure..	£2,068,430	£2,068,453	£2,068,453	£2,062,391	£2,024,707
Loan outstanding ..	998,244	1,008,694	1,212,713	1,168,685	1,177,384
Traffic revenue ..	818,756	738,321	696,893	684,026	677,881
Total revenue ..	845,645	766,577	726,078	722,307	715,120
Working expenses ..	575,267	518,037	488,274	473,678	451,667
Gross balance ..	270,378	248,540	237,804	248,629	263,453
Net profit	167,243	145,971	123,193	134,821	154,163
Average fare per passenger	1·137d.	1·124d.	1·109d.	1·127d.	1·129d.
Traffic receipts per track mile ..	£6,602	£5,954	£5,620	£5,516	£5,695
Traffic receipts per car mile	15·56d.	13·97d.	13·20d.	12·02d.	12·10d.
Power cost per car mile	2·584d.	2·490d.	2·348d.	2·171d.	2·164d.
Operating costs per car mile	10·880d.	9·798d.	9·240d.	8·323d.	7·977d.
Total charges per car mile	12·890d.	11·738d.	11·409d.	10·322d.	10·015d.
Ratio of expenses to revenue	68·02%	67·5%	67·2%	65·6%	63·2%
Total track mileage..	124	124	124	122	119
Number of cars in stock	598	598	599	596	595
Car mileage	12,630,577	12,688,163	12,682,018	13,657,888	13,442,605
Passengers carried ..	172,842,494	157,636,595	150,755,680	145,656,374	144,085,927

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At joints—On new tracks—On steep gradients—On wheel tires—Contact of wheel and tire—Leeds special rail section—Railway rails—Depression of check.

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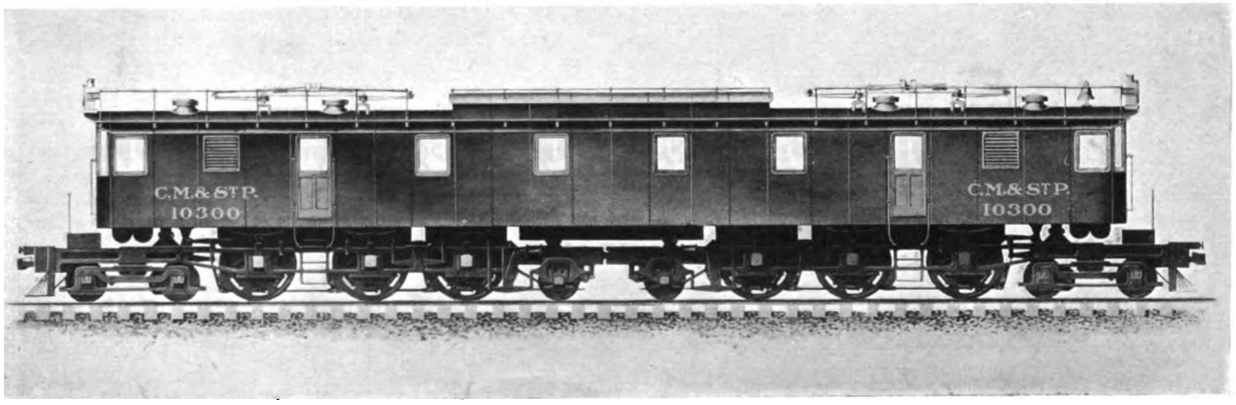
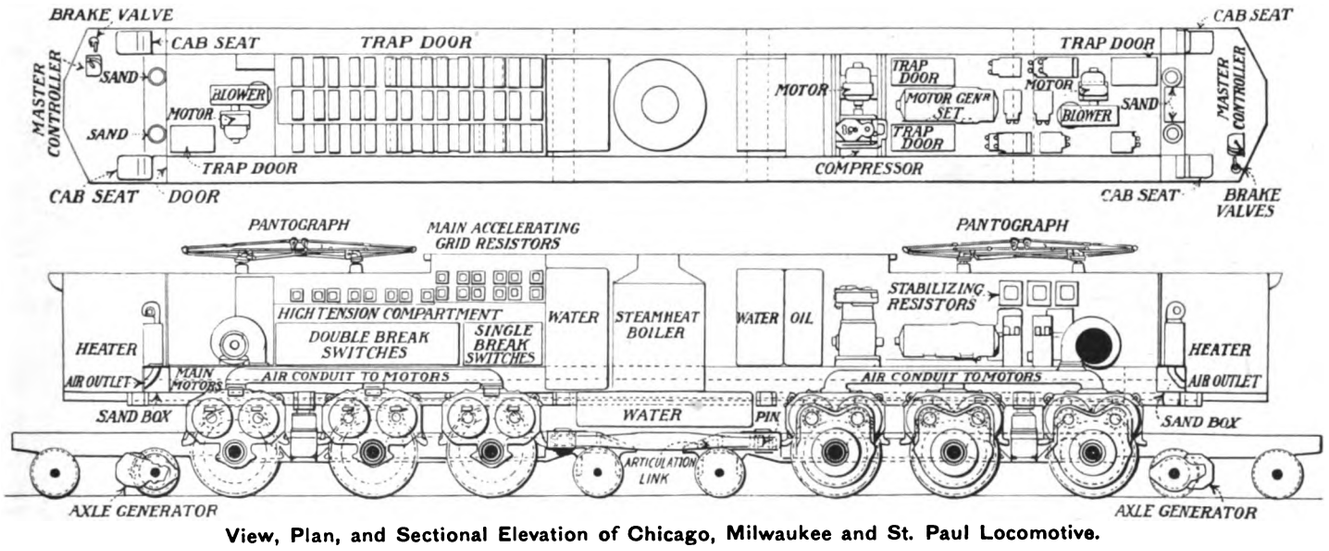
THE Tramway & Railway World
WITH MOTOR TRAFFIC SECTION

Founded 1892. LONDON, MAY 16, 1918. Vol. XLIII.

POWERFUL ELECTRIC PASSENGER LOCOMOTIVES FOR THE CHICAGO, MILWAUKEE AND ST. PAUL RAILWAY.

The concentration of enormous horse-power in a single locomotive unit has long been the recognised tendency in railway practice, originating from considerations of economy of labour and the greater efficiency of large units. The limits of the two-man crew have now been reached, while further increase in size will yield but small mprovement in efficiency. Recourse must be had to some new form of motive power if necessary gain in hauling capacity is to be made. It is fortunate in many ways that electricity has thoroughly proved its value for this purpose. On the Chicago, Milwaukee and St. Paul Railway its use on the 440 miles of line over the Rocky Mountains has been so satisfactory in cutting down power costs, hauling heavier trains, and keeping traffic moving in all weathers, that the company's decision has recently been made to electrify another mountain division—the 211 miles from Othello, Washington, over the Cascade Range to Seattle and Tacoma. With the completion of this work, a distance equal to that from New York to Cleveland will be under electrical operation. To handle passenger traffic over this and the Rocky Mountain division, the St. Paul has ordered 10 Baldwin-Westinghouse electric locomotives.





View, Plan, and Sectional Elevation of Chicago, Milwaukee and St. Paul Locomotive.

The complete locomotive, with a total length over couplings of 90 ft., weighs ready for service 266 tons,

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with an adhesive weight of 330,000 lb. Following the modern tendency in design toward conservation of weight and space, these new locomotives will be single-cab units, although the horse-power capacity is much greater than for any double-cab engines now in service. The cab is carried on the two main running gears, each having a four-wheel guiding truck, three driving axles in a 16 ft. 9 in. rigid wheel base, and a two-wheel

Western Section of Chicago, Milwaukee and St. Paul Railway.

trailing truck. It thus corresponds to two Pacific type running gears coupled with a link and having two-wheel trucks on the adjacent ends.

The main running gear centre pins are located midway between the first and second driving axles of each running gear. On one running gear the centre pin is designed to restrain the cab both longitudinally and laterally, while on the other running gear the centre pin restrains the cab only laterally, permitting free longitudinal movement. This arrangement of riding and floating pins relieves the cab of all pulling and buffing strains due to train load, as these strains are taken directly through the running gear side frames and bumpers.

Driving wheels are 68 inches in diameter, and carry 55,000 lb. per axle. Guiding trucks have 36 in. wheels, while the two-wheel trucks each have a load of 38,500 lb. at the rail, with approximately 62,000 lb. distributed on each of the four-wheel trucks. On any single driving wheel the non-spring supported weight is that of wheels, axles, and driving boxes only. The flexible equalised leading pair of driving wheels are equalised together on the longitudinal centre line of the locomotive. This arrangement combines all the advantages of the standard front end construction of the American and consolidation types of steam locomotives. The two remaining pairs of driving wheels and the two trailing wheels of the main running gear are side-equalised together, again following accepted steam locomotive practice.

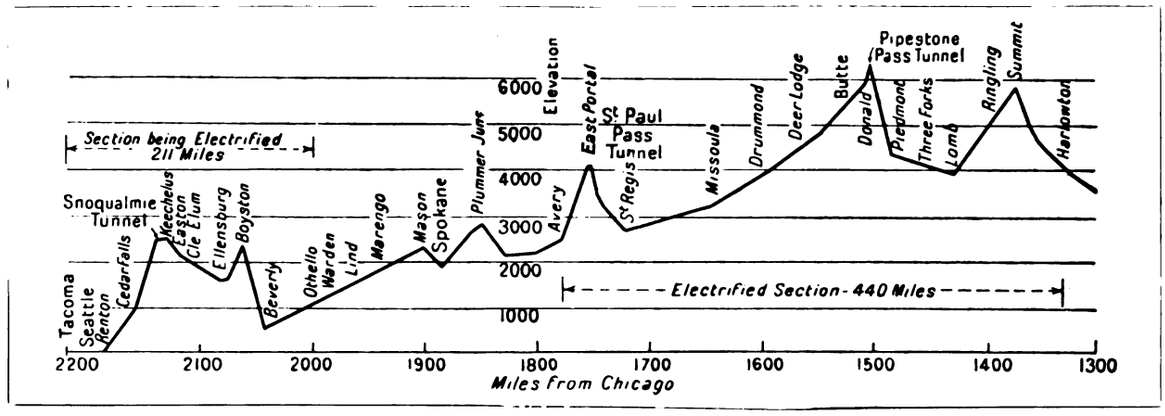
The centre of gravity of the main running gear, including motors, is 41½ inches above the rail, and the height of the centre of gravity of the complete locomotive is 63 inches above the rail.

Among the novel features to be found in these locomotives are :—

(1) Large capacity in single-cab unit.
(2) Flexibility of running speeds with small rheostatic losses.
(3) Twin motor design with quill drive.
(4) Low voltage auxiliaries simplifying inspection, maintenance, and operation.
(5) Simple and effective regeneration.
(6) Improved equalisation to minimise weight transfer in trucks.
(7) Auxiliary train-heating plant.

The use of regenerative control for holding trains on descending grades is such an important function in these locomotives that special arrangements have been perfected to secure positive operation of this feature over widely varying speeds. The same main motor combinations for "motoring" are used for "regenerating," except that the fields of the main motors are separately excited over a wide range by axle-driven generators. These are so connected with balancing resistance that inherent stability in the motor characteristics during regeneration is assured, irrespective of whether the changes in line voltage are sudden or gradual.

While the regenerative braking of trains lessens the duty on the air-brake equipment, further safety in



Profile of Western—Harrowton to Tacoma—Section of Chicago, Milwaukee and St. Paul Railway.

type of quill drive used affords a means of permitting a motor located well above the road bed to drive an axle which, with its wheels, is free to follow the rail independently. It is evident that this drive secures all the advantages of a flexible gear in cushioning the transmission of torque, and avoids the road shock far more effectively than with the common flexible gear construction and mounting.

Each main running gear has three-point equalisation with a single point toward the end of the locomotive in accordance with accepted steam locomotive practice. The four-wheel guiding truck centre pin and cross-braking with electric engines is introduced with the axle-driven generators. These machines are mounted on the pony trucks of the locomotive, and in addition to exciting the motors during regeneration, furnish the power for operating the air compressors and blower motors when the locomotive is hauling. This method insures a current supply to the air-compressor motors irrespective of the overhead trolley supply, and provides that compressed air will always be available for use of the air brakes.

In electric locomotives without connected wheels, weight transfer due to tractive effort is an important

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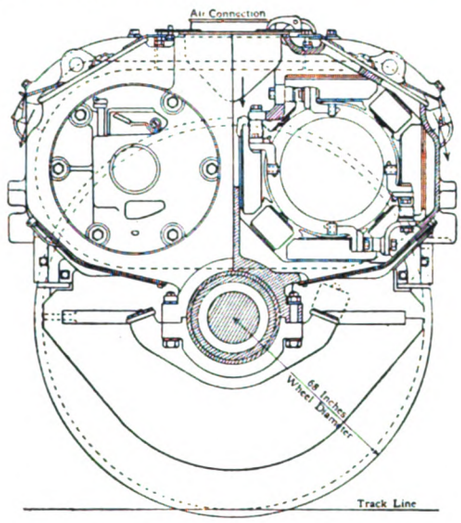
point of interest. This is caused by the drawbar pull being exerted at the coupler height, which, with the reaction at the rail, tends to lift the leading end and depress the trailing end. This changes the weight distribution and increases the tendency of the wheels to slip. The method of equalisation described above reduces the weight variation on the driving wheels to only 6 per cent. from normal when pulling at 30 per cent. adhesion.

The question of passenger train heating is of vital importance due to extreme weather conditions encountered in that section of the country. Heat must be assured under all conditions of failure of equipment, and delays of trains. The heating plant therefore must be entirely independent of the electrification. Each locomotive is equipped with an oil-fired steam boiler, designed to burn ordinary fuel oil used by the railway company. Provision is made for a storage of 7,500 gallons of water and 750 gallons of oil in each engine.

The careful attention given to improve the details of design and operation ensures that these new engines



Mounting of St. Paul Locomotive Motors.

will mark an epoch in the development of the electric locomotive for steam railway passenger service.

These will be the most powerful locomotives running in passenger service. A single unit is able to haul a 950-ton train (12 coaches) over the entire mountain section at the same speeds as called for by the present schedules. The one-hour rating for one of these locomotives is 4,000 H.P., and its continuous rating is 3,200 H.P., with a starting tractive effort of 112,000 lb. The normal speed on level track is 60 miles per hour; on a 2 per cent. grade about 25 miles per hour.

One of the noteworthy characteristics of these units, which is very desirable in passenger service but which has not heretofore been attained with this type of electric locomotive except at the expense of heavy rheostatic losses, is the flexibility of running speeds.

There are nine running positions without rheostatic loss. This is accomplished by the use of six 1,500-volt twin motors on the locomotive, arranged for three-speed combinations as follows:—

Position No. 1—One set, 6 motors in series.

Position No. 2—Two sets, 3 motors in series.

Position No. 3—Three sets, 2 motors in series.

During the change from one speed combination to another, tractive effort is maintained.

Two additional running speeds are obtained on each speed combination by means of inductive shunts on the main motor fields, which assist in cutting down current peaks as well as save rheostatic losses, and enable the power demand over the varying profile to be kept more nearly constant. The speed range is from 8 to 56 miles per hour, depending on the load.

The use of the twin-motor design with quill drive not only permits the most effective use of space between the driving wheels, but enables the use of two armatures each wound for 750 volts direct current, and geared to the same quill. This also makes possible the advantage of better commutating characteristics inherent in the lower voltage motors.

Low voltage auxiliaries considerably reduce the complication and hazard of high voltage on these locomotives. The only high-voltage apparatus among the auxiliaries is the motor of the small motor generator which is used for train lighting and charging the storage battery. The resultant simplification secured by the use of low voltage appliances decreases the complication of installation, maintenance, and operation. Ordinary inspection can be carried on, including the functioning of switches and auxiliaries, with the complete absence of 3,000-volt power on the locomotive.

AMERICAN TRAMWAYS AND THE WAR.

A Hopeful Outlook on a Difficult Position.

The spirit in which our American Allies are confronting the task that lies before them is strengthening day by day, and will grow ever more determined as the difficulties become more clearly realised. Our excellent contemporary, the New York *Electric Railway Journal*, has recently reviewed the position of the electric railway industry in America, and despite the great difficulties that weigh upon the companies, it indicates that there is a firm intention to go forward with courage and, facing the facts as they are, to prepare to meet whatever tests of endurance the crisis may impose. In its issue of March 9 our contemporary writes:—

As the first anniversary of the entry of the United States into the world-war approaches, it is worth while to attempt to size up the situation so as to utilise the experience so far gained in preparing for the tug-of-war which undoubtedly is to come. The collapse of Russia probably means a considerable prolongation of the war, and if it is to last for several years more, each successive year will present greater operating difficulties for electric railways. There will be a real test of the mettle of the industry here, as there already has been one abroad. In the railway business, as in the country's military, naval, and aerial preparations, we must get ready for a long continuation of hostilities.

It would seem as if no business could be harder hit than was ours during the past year. The war has brought sky-rocket prices of materials, shortage of labour, money and materials, unusual transportation burdens, etc., and it will bring more of these. It is an uncomfortable time for the responsible manager or the responsible employee, but it is a time when there is much of promise visible to those who look on the business as a means of service rather than merely a means of livelihood. The times are separating the sheep from the goats.

The great lesson that the war is teaching is that operating conditions and public standards of service have undergone tremendously rapid changes in a few years, making it very difficult to meet the requirements with existing equipment. Unfortunately, there is scarcity of money with which to buy new equipment, but such money as is available is being spent more intelligently than ever before. To this end electric railway operation is being analysed as never before, and promising economies are constantly being discovered.

Moreover, the public, through its representatives, is permitting the introduction of economies that would not have been tolerated in peace times. If a public body or official can be shown that a proposed practice will directly or indirectly contribute to the conservation of our war resources, the chances are that this practice will be approved and even encouraged. It is reasonable to assume that privileges granted under stress of war will not be withdrawn afterwards if they are proved not to conflict with public interest. The conditions thus outlined are very difficult, but they need not be discouraging. The present, however, is no time for either timidity or discouragement on the one hand, or, on the other, for complacency or indifference to the seriousness of the situation which confronts us.

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THREE-PHASE ELECTRIC TRACTION ON THE ITALIAN STATE RAILWAYS.

Savona-Ceva Mountain Section.

By E. Lesniewski.

As readers of this journal are aware, electric traction is widely utilised on the railways of Italy, over 700 kilometres (434 miles) of the State Railway tracks being electrified. This figure, however, conveys but a faint idea of the significance of electric traction in heavy railroad work in Italy, as the electrified sections are in general those of exceptionally difficult conditions, with steep gradients, long and numerous tunnels, and heavy goods and passenger traffic. An accompanying table (I) gives particulars of these electrified railways. Traffic on them is maintained by some 200 locomotives, the rating of the greater part of these being 2,200 H.P., and of the majority of the remainder 2,600 H.P., as shown in Table II.

The three-phase system is almost universal throughout Italy, and it has attained to a high degree of perfection. Moreover, owing to the practicability of the interchange of locomotives and other parts of the electrical equipment, as well as of the technical staff, working conditions are made much easier. The three-phase system, though so largely and successfully adopted on Italian State railways, is not greatly utilised elsewhere. On the Continent, three-phase traction for main-line service is employed in the Simplon tunnel—the largest tunnel in the world (length 13 miles)—between Switzerland and Italy; also on the Burgdorf-Thun Railway in Switzerland, and on the Spanish railway between Santa Fe and Gorgal. In America the three-phase system is used only in the Cascade tunnel electrification on the Great Northern Railway.

But constant speed induction motors, introduced by Italian railways for heavy railroad service, are now used in the latest American installations with the new and singularly successful split-phase electric traction system, which eliminates many of the troubles of both systems with alternating current (single-phase and three-phase) and possesses most of their advantages. In view of the utilisation of induction motors, both in three-phase and split-phase traction, it is all the more wide application in other countries; but it seems certain that under such conditions as those prevailing in Italy this system would give equally satisfactory results elsewhere. Moreover, notwithstanding the abnormal conditions arising from the European War,

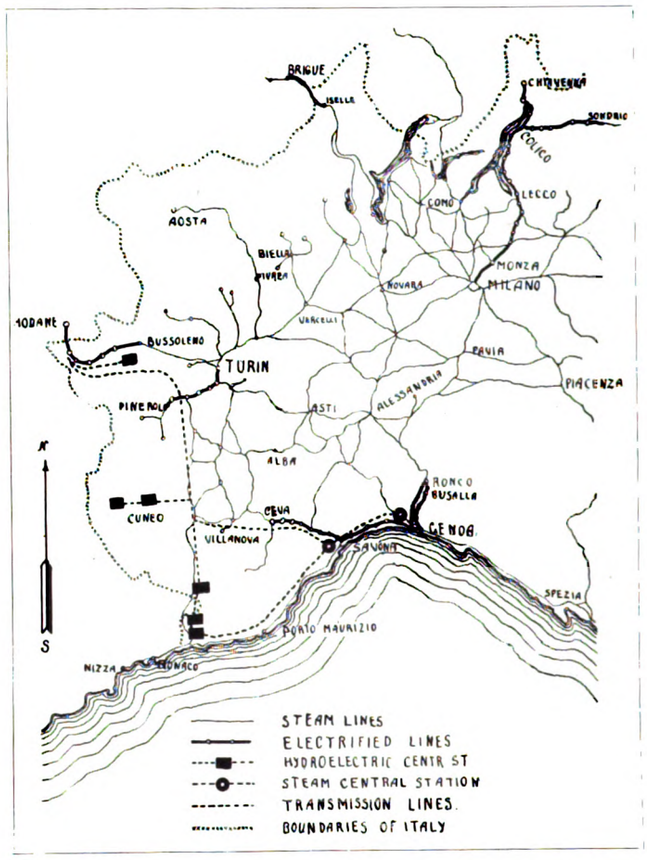

Fig. 1.—Map Showing Electrified Lines of Italian State Railways.

it is being rapidly developed still further in Italy, and electrification works there are kept fully engaged. The Societa Italiana Westinghouse, for instance, which has built in a few years some 150 three-phase locomotives at its special works in Vado Ligure, is at present

Table I.—Sections of Italian State Railways Electrified on the Three-phase System.

Line.	Year electrified.	Length of Route Miles.	Length of Track Miles.	Maximum Grade per cent.	Number of Stations.	Line Voltage.	Frequency per second.
Valtellina (Lecco-Sondrio-Chiavenna) ...	1902	66	78	2·0	23	3,000	15
Giovi (Sampierdarena-Ronco)	1910	33	106	3·5	11	3,700	16·7
Bussoleno-Modane	1913	37	72	3·0	8	3,700	16·7
Savona-Ceva	1914	29	43	2·5	9	3,700	16·7
Monza-Lecco	1915	23	40	1·1	11	3,400	15·8
Genoa-Savona	1917	30	49	0·7	14	3,700	16·7
Turin-Pinerolo	1917	23	37	1·3	11	3,700	16·7

interesting to investigate the many other aspects of construction and performance of the three-phase system in which these two systems are identical, e.g., large motors, side rods drive, water rheostats, constant speed operation, energy regeneration, cascade connection of motors, etc.

It is difficult to prophesy whether three-phase traction, so greatly developed in Italy, will find equally completing 20 new powerful locomotives of the type described in the following pages.

The most important and attractive feature of the three-phase system is the lightness of the locomotive, to which is due the comparatively low cost of this, the most costly part of the electrical equipment of an electrified railway. The absence of a step-down transformer on the locomotive, the simplicity of the water

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rheostat, eliminating complicated switchgear, and the simple three-phase motors, all render the locomotive eminently simple in construction, operation, and maintenance, and ensure its electrical equipment of high efficiency. The sub-stations are also of very simple construction, without any rotating machinery. The braking of the trains on down gradients by regeneration of energy is an excellent feature of the three-phase system for heavy railway work. Owing to a sufficiently high voltage and the spacing of the sub-stations, the contact or trolley line of this system under heavy current conditions requires only a small section of copper. But having two insulated lines instead of the one of other systems, it necessitates more accurate erection, a greater frequency of poles and, consequently, somewhat increased maintenance. Another complication of the three-phase system is in the supply of current with special low frequency if, as normally, the sub-stations are without rotary machines (frequency changers). This necessitates special transmission lines and low frequency generators and a further complication in connecting the electric railway load to loads for other purposes in order to increase the total load factor on the central station. Italian engineers have met this difficulty by connecting the current generator of high frequency (electric lighting and industrial motors) with the railway generator of low frequency to the same turbine, both alternators serving at the same time as generator and frequency changer. These groups of machines are installed at certain central stations of a large connected network with a transmission line at 70,000 volts. The load factor of both systems of distribution is greatly increased by the application of these balancing generator groups.

One only of the electrified lines of the Italian State Railways is described below—the Savona-Ceva section—but as the electrification and equipment are similar to those generally adopted in Italy, it may be regarded to all intents and purposes as a standard of the Italian electric railways.

The railway, which was completed in the year that marked the commencement of the war, is noteworthy owing to the technical perfection of its equipment, to which particular attention has been given as well as to the solidity of construction, owing to its economic and strategic importance. The lengthy experience of the Italian engineers in the electrification of difficult sections of main lines enabled them successfully to accomplish this task, which has been excellently carried out. The equipment presents many novel and interesting features, new methods of train conduction, only possible under the system of traction here adopted, having been utilised with great success.

The Savona-Ceva Railway (Fig. 2) runs north-west from the port of Savona to the richest part of Piedmont, forming also a trunk line of international communication from Savona through Turin to France and Switzerland. Hitherto—i.e., before the construction of the Ventimiglia-Cuneo line—the Savona-Ceva was the only railway linking up the West Italian Riviera and the French Riviera with Piedmont and at the same time affording an outlet to other countries.

About 70 per cent. of the imports by sea, consisting chiefly of coal (principally from England) destined for the north-west of Italy, Piedmont, and Lombardy, as well as France and Switzerland, is carried by the Savona-Ceva line. The goods imported through Savona during 1913 totalled 1,620,000 tons.

The whole of the electrified section, having a length of some 45 kilometres (28 miles), has a single track, and comprises numerous tunnels, and curves to the extent of about 60 per cent. of its total length. The least curve radius is 400 metres (say, 1,300 ft.), and the maximum gradient 2·5 per cent. As indicated by the profile (Fig. 3), the track traverses several mountain ranges, attaining an elevation of 1,600 ft. above sea level. Between Savona and Ferrania is a very difficult section, where in a distance of ten miles the altitude of the track shows a variation of over 1,000 ft. The tunnel with which this section terminates, 1½ miles in length and located on a curve, hindered the traffic considerably when it was under steam traction. The

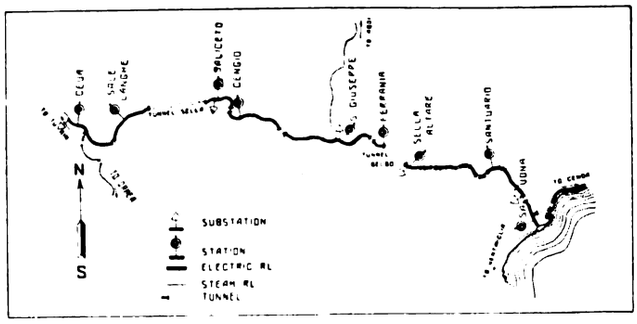

Fig. 2.—Route of Savona-Ceva Section.

same applies also to the Belbo tunnel of 3·6 miles in length.

Almost the entire capacity of the line was utilised under steam traction, and the necessity of coping with an ever-increasing goods traffic, coupled with the desire to accelerate the speed, led to the electrification of the section. This was completed in the spring of 1914, since which time the whole of the goods and passenger traffic has been successfully dealt with by electric traction. As in the cases of other electrified sections of the Italian Railway system—both mountainous and comparatively level—the three-phase system was selected for this line, with a voltage of 3,700 on the trolley line and a frequency of 16·7 periods per second.

As mentioned above, the capacity of the line was considerably augmented after electrification, while the two tunnels referred to above—one 1½ miles in length with a gradient of 2·5 per cent. on a curve, and the other 3·6 miles long—ceased acting as "bottle necks," and

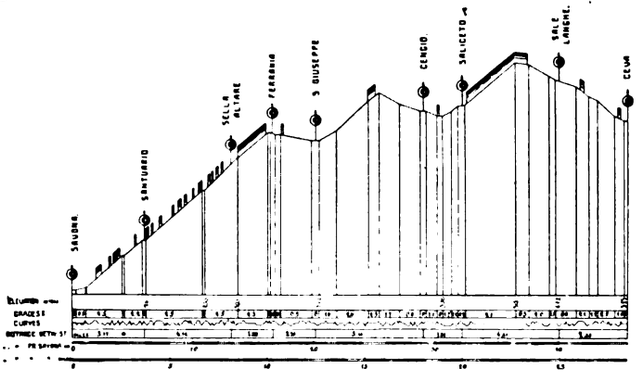

Fig. 3.—Profile of Savona-Ceva Section.

even without forced ventilation there was no essential difference between the traffic conditions in the tunnels and on the open parts of the line. The all-round speed compared with that of the former steam traction has been accelerated to about double, the speed maintained on the steepest up-grade being 31 miles per hour, whereas specially powerful mountain steam locomotives of the "decapod" type, Fig. 4, were unable to exceed a speed of 15 miles per hour. A further acceleration of speed for express trains is

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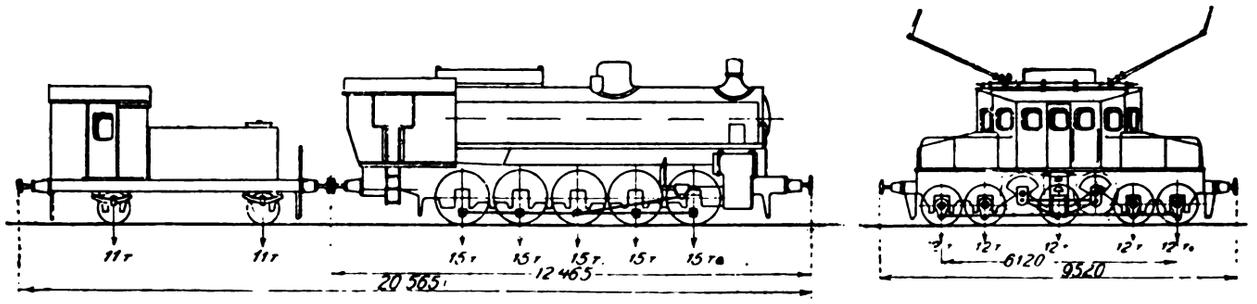

Fig. 4.—Comparison of Steam and Electric Locomotives—Italian State Railways.

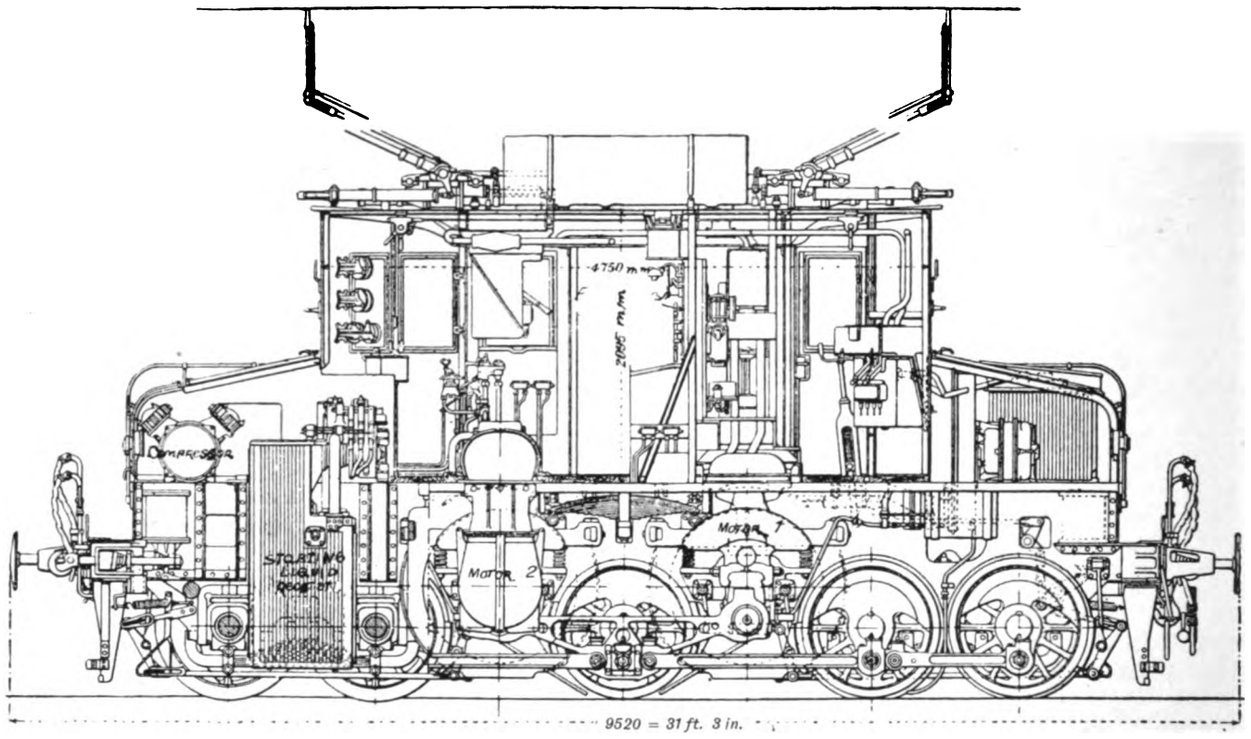

Fig. 5.—Sectional Elevation of Westinghouse 2,200-H.P. Three-Phase Electric Locomotive—Italian State Railways.

TABLE II.—THREE-PHASE LOCOMOTIVES ON ITALIAN STATE RAILWAYS.

Railway Classification.	Number in Service.	Rated H.P.	Working Speed. Km. per hour.	Working Speed. Miles per hour.	Built by	Year in Service.	Weight Metric Tons.
E2	10	600	64 32	40 20	Ganz Co.	1902	55
E430	2	600	32	20	Ganz Co.	1902	48
E360	3	900	64 32	40 20	Ganz Co.	1904	64
E380	2	1,700	64 32	40 20	Ganz Co.	1906	64
E390	2	1,100	42 21	26 13	Ganz Co.	1907	61
E550	150*	2,200	50 25	31 15	Westinghouse	1908-1918	60
E330	16	2,600	37 50 75 100	23 31 46 62	Westinghouse	1914-1916	73
E331	18†	2,600	37 50 75 100	23 31 46 62	Brown-Boveri	1917	85
E332	6†	2,600	37 50 75 100	23 31 46 62	Oerlikon	1917	85

Altogether 10 motor cars and 199 locomotives with total output of motors (one hour rating) 449,500 H.P.
* 130 in service and 20 under construction.
† Some of them under construction.

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projected, for which purpose high-speed Westinghouse locomotives (type 1–3–1), rated at 2,600 H.P., are being built, capable of hauling trains on up and down grade (2·5 per cent.) at a speed of 47 miles per hour.

A short description of the three-phase locomotives used on the Savona-Ceva line is appended. This

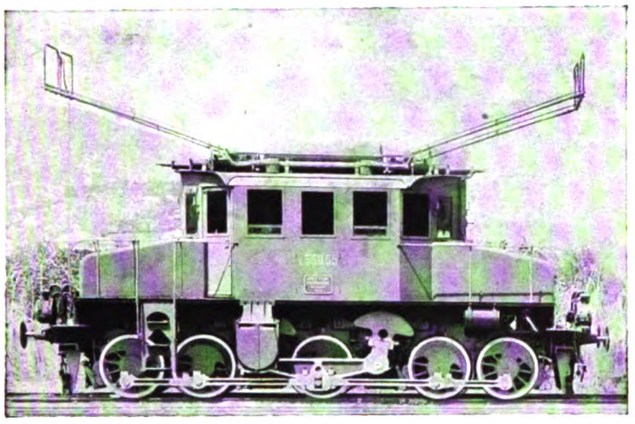

Fig. 6.—Side View of 2,200-H.P. Three-Phase Locomotive.

Fig. 7.—Electric Train of Savona-Ceva Section.

locomotive combines the qualities most essential for heavy railroad service, viz., great mechanical and electrical strength, and owing to its mechanical construction and the qualities of three-phase motors, a capacity to stand heavy overloads. The locomotive has an amply high centre of gravity, important to the running qualities, and in consequence of the method of motor suspension, the dead weight on the axles—i e., the weight not carried by springs—is reduced to a minimum, consisting only of the weight of the axle and part of the weight of the driving rods. The locomotive's weight per one H.P. (ratio weight to H.P.) of its rating is less than other types of locomotives, as it develops about 36 H.P. per metric ton of its weight, and consequently its power per ton of its weight is 2–3 times as much as the majority of single-phase or high-tension D.C. locomotives. Twenty-six of these locomotives, as shown in Figs. 5 and 6, are at present in use on the Savona-Ceva section (of which 22 are working and four in reserve or under inspection), and a total of 130 such are working on the different electric sections of the Italian railways, with a further 20 under construction. Nowhere in the world—the writer believes—is there another such instance of a total of 130 electric locomotives in service all of one design, and this fact speaks high praise for the merits of the three-phase system in heavy railroad service.

The total weight of the locomotive is 60 metric tons, evenly distributed over the five axles. The principal dimensions and weight of the locomotive are as below :—

Weight	60 metric tons.
One hour rating	2,200 H.P.
Tractive effort corresponding to one hour rating	12 metric tons (26,000 lbs.).
Speed at this tractive effort ...	31 miles per hour.
Length over buffers	9,520 mm. (31 ft. 6 in.).
Total wheel base	6,120 mm (20 ft. 6 in.).

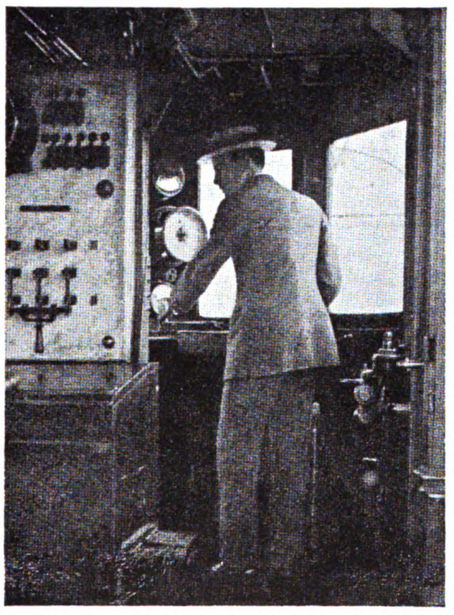

Fig. 8.—Interior of Cab of Three-Phase Locomotive.

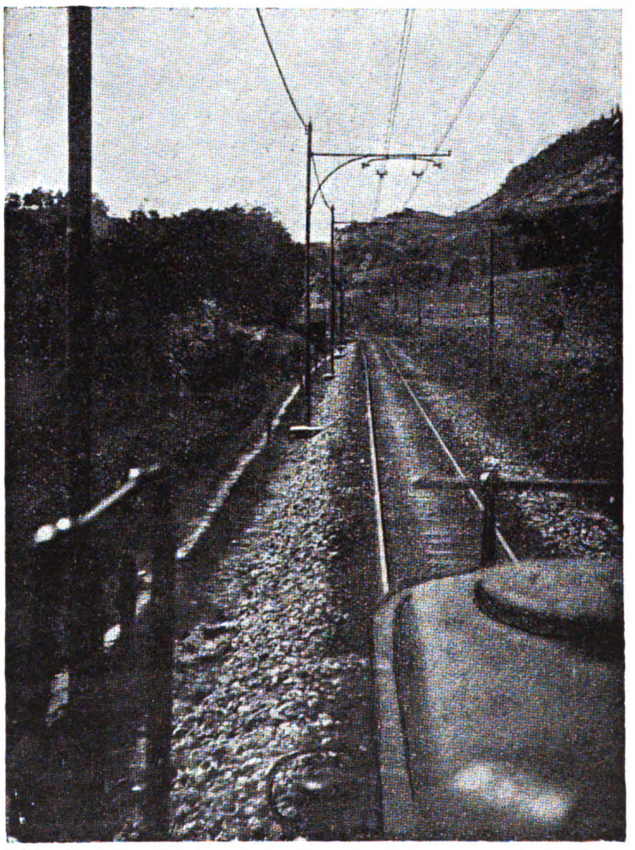

Fig. 9.—Trolley Wire Suspension—Savona-Ceva Section.

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The two motors of the locomotive drive the wheel through a so-called "Scotch yoke" system of gearless drive. The motors are fed directly from contact trolley line with a three-phase current at 3,700 volts. Two phases of current are supplied by two-phase contact line, the third by the rails. The locomotive has two operating speeds, 31 and 15·5 miles per hour. The higher speed is obtained with both motors connected to the line with short circuited winding of the rotor. The lower speed is obtained by putting the motors in cascade; the stator winding of one of the motors is then connected direct to the line and that of the second is fed from the rotor winding of the first motor.

The use of regeneration on this line has considerably reduced the energy consumption; but of not less importance is the greater degree of safety assured and the smoothness of running on the down grade, as well as the reduction in wear of the track, rolling stock, tyres, and of the braking system.

Electric energy is purchased by the Savona-Ceva Railway from the Negry and Maira Company, who possess several central stations connected up in parallel. A great part of the energy is provided by the St. Delmozzo hydro-electric central station, situated a distance of about 100 miles from Savona. This station has a 40,000-H.P. output (which will be increased in the near future to 60,000 H.P.) and supplies energy at the same time to other electric railways. A steam central station stands as reserve. There are five sub-stations in all, the location of which is shown on Figs. 1 and 2. The entire equipment of a sub-station on the Savona-Ceva Railway consists of four Westinghouse single-phase transformers, each of 750-k.v.a. continuous rating, and a corresponding switchgear set. Three working transformers are joined together in delta, for any of which the fourth reserve transformer can be used as a substitute. Against the failure of a static sub-station, each section of the Italian electric railways is provided with a portable sub-station, capable of being used to replace any of the static sub-stations. One of these as used on the Savona-Ceva Railway is shown in Fig. 10.

The contact line is connected with the sub-stations, not directly, but through the intermediary of special switching posts, at which special attendants are on service. These switching posts are provided with oil switches and measuring instruments (voltmeters and ammeters for all outgoing feeders, in addition to lightning arresters). Similar switching posts are at all the stations, in order to render possible the disconnection of the current at the station or any of the adjoining sections without interrupting the feeding of other sections. The switching posts are connected

Fig. 11.—Trolley Wire Suspension in Tunnel.

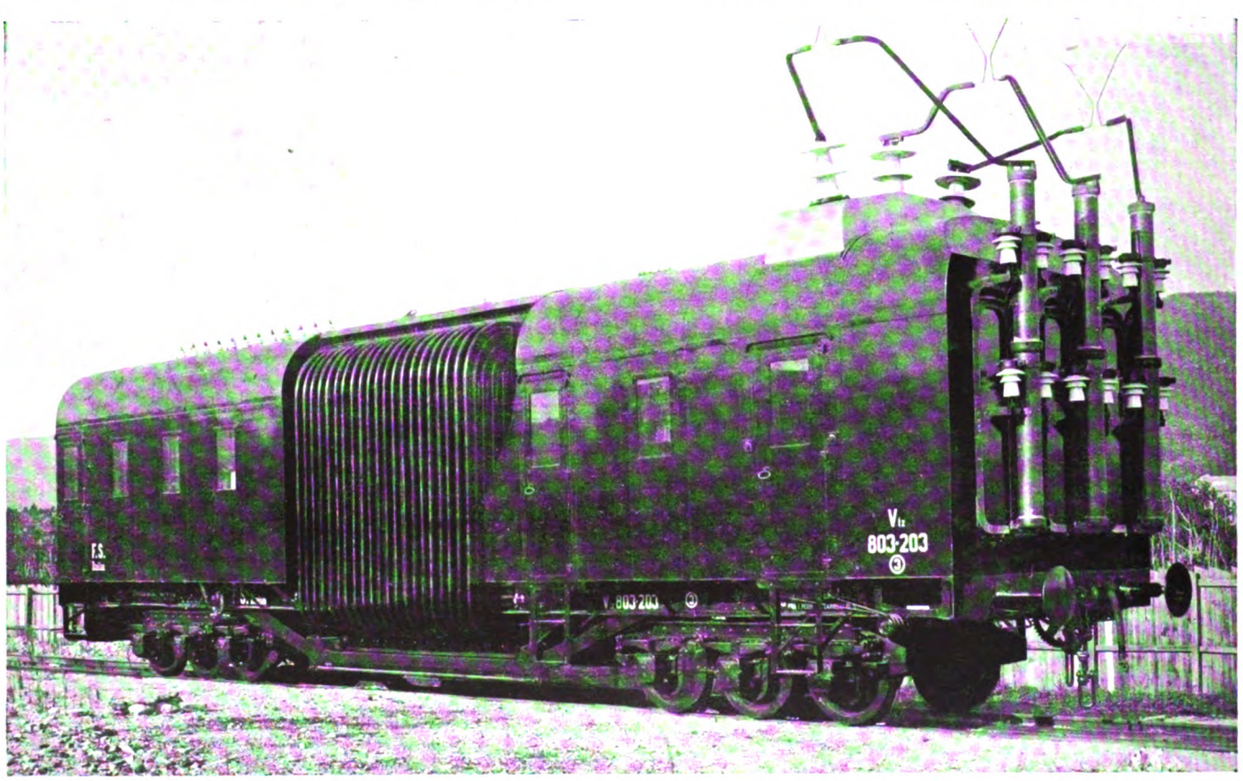

Fig. 10.—Static Sub-Station of Portable Type Used on Savona-Ceva Section of Italian State Railways.

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with each other, with neighbouring sub-stations and with the huts of the flagmen by telephone.

Fig. 9 gives a general idea of the trolley wire suspension. The trolley wire, double for each phase, consists of two round wires of hard drawn copper, having a diameter of 8 mm. and a section of 50 sq. mm.,

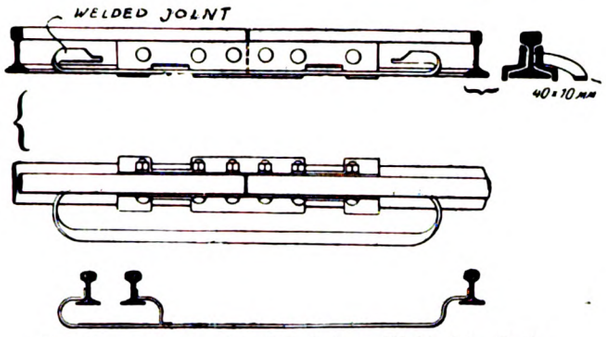


Fig. 12.—Rail Bonds of Soft Iron Welded to Rails.

making the copper section per phase $2 \times 50 = 100$ sq. mm., total for both phases, 200 sq. mm. (400,000 circ. mills.). No parallel feeders are provided, either for the overhead contact line or for the third phase of the rails, as the high voltage of the trolley wire of 3,700 volts and the short distance between the sub-stations do not necessitate a higher conductivity in the contact line.

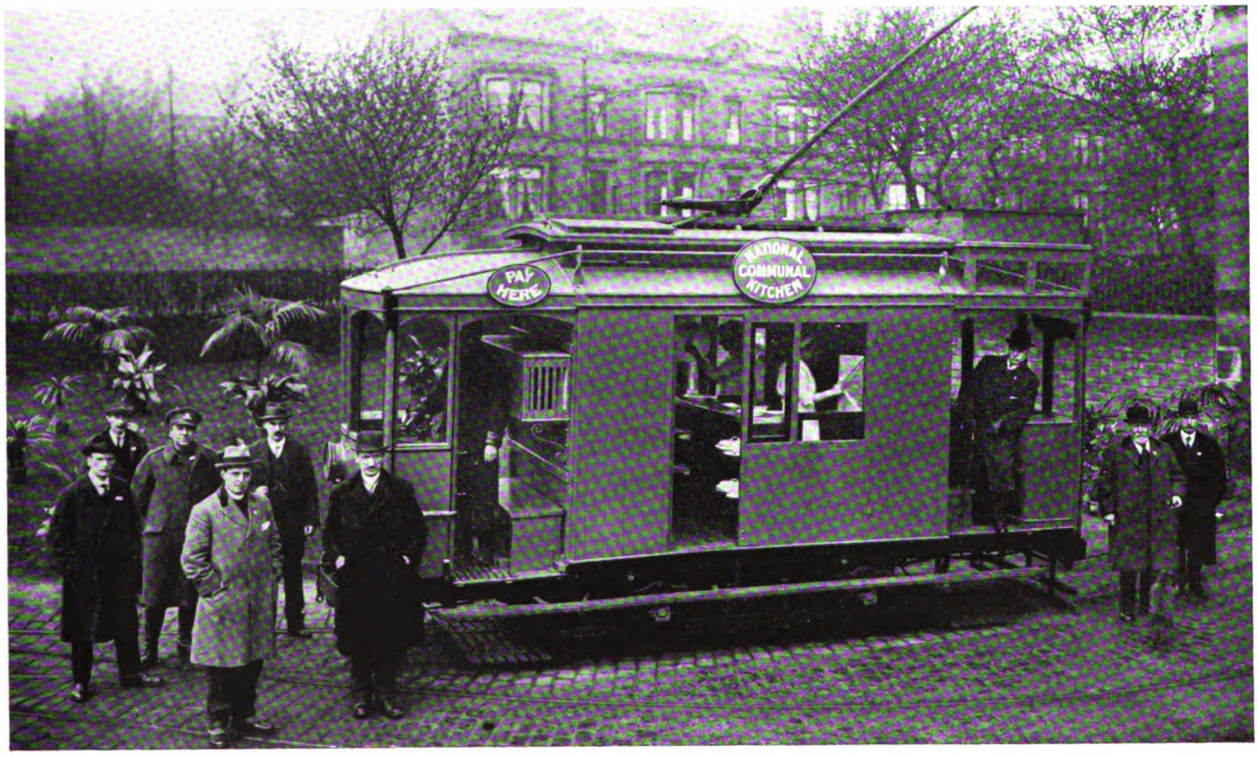
The suspension of the trolley wire in tunnels is also of the standard type used on the Italian State Railway, and is shown in Fig. 11.

The poles are tubular, as is usual on three-phase railways in Italy. The construction of the electric rail bonds on this railway is of a kind probably not hitherto used, and is very interesting. These bonds, depicted in Fig. 12, are made of soft iron, so that, whilst amply meeting the needs of the three-phase system, their great solidity and cheapness render them unattractive to thieves.

TRAVELLING NATIONAL KITCHEN.

The first travelling national kitchen, a single-deck tramway car reconstructed at the Corporation tramway workshops, was put into service at Halifax on April 25, the idea being that of Alderman Charles F. Spencer, Director of National Kitchens, who is also chairman of the Halifax Tramways Committee. The food is stored on the platform vestibules, the cooking apparatus being fitted within the body of the car. This apparatus includes two electric ovens, two steamers, and three hot-plates with boiling pans placed at one end, and two steamers, one large boiling pan, and three hot-plates with boiling pans installed at the other end. Water is supplied from a 100-gallon tank placed on the roof over one of the vestibules. Energy for the cooking apparatus is taken from the overhead trolley line at the usual voltage. The cooking apparatus has been designed with elements wound for a pressure of 500 to 550 volts, with one pole earthed. Special care was taken to ensure adequate insulation from the frame under all conditions likely to arise in practice. The whole plant was put to work without the least trouble, not a single fuse having blown during the connecting, testing, and subsequent operation.

At the pay desk, which is placed at one end of the car, the money which it is desired to expend in food is exchanged for coupons, and from each side of the car the service is made with great expedition by two attendants. The inauguration of the experiment aroused much interest. Considerable numbers of people, female workers from factories and men in overalls, met the car at various points, and all came with receptacles for receiving the food which is carried in the car. On the trial trip the following dinner was provided :—Three-quarters of a pint of soup, 1d.; suet dumpling, 1d.; vegetable pie, 4d.; potatoes, 1d.; rice or ginger pudding, 1½d. If the scheme proves successful, Alderman Spencer expects that it will be taken up in other towns.



Tramcar as Travelling Kitchen.

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LONDON, MAY 16, 1918.

Restriction of Tramway Services.

The President of the Board of Trade some little time ago made a general statement in Parliament as to the steps to be taken to reduce the consumption of coal, particularly in the south-eastern half of England. Among these steps was a reduction of services on tramways and railways. Some of the railway companies and many of the tramway undertakings had already effected limitations. At the end of April, however, the Tramways (Board of Trade) Committee sent out a letter to tramway authorities in the South of England which was practically an order to reduce their coal consumption by 15 per cent. Several means of effecting this reduction were suggested, but they practically amount to only one, viz., a reduction of services. For the purpose of ensuring that the mandate is carried out, weekly statistical returns are called for as to car-miles, coal consumption, units generated, etc. This additional work may bear hardly on already overtaxed office staffs, but it is clearly necessary that the Committee should receive this information. As was to be expected, the tramway authorities are loyally co-operating in giving effect to the coal economy scheme. Services are being suspended earlier in the evening, and in a number of towns the hours during which cars are run on Sundays are being much curtailed. Another way in which economy can be effected is by reducing the number of stopping places. This plan is being carried out in America, and it is estimated that a large saving will be made thereby. It is not a pleasant task for managers to have to seek new means of economy. They have already diminished energy consumption in every way possible, while keeping adequate services running. They have now to go a step further, and to limit services so that they will become inadequate to the public demands. Such changes may create much inconvenience to the public, but this is unavoidable, and when it is clearly understood to be essential in the national interest, there will be few who will complain. The difficulties may to some extent be diminished by changes in the habits of the people. Many passengers can choose their own time for travelling, and they must select the less crowded hours of the day. The Tramways Committee suggest that factories, warehouses, shops, and offices should "stagger" their times of opening and closing, thus spreading the rush hour traffic over a longer period. Probably some compulsion will be needed before effect can be given to the proposal, but there is nothing really to be said against it in the circumstances. In many towns where the tramways are rendering essential services in carrying munition workers, some plan of this kind must be adopted. Later it may be that discrimination will have to be exercised, and a system of travel permits adopted, because whatever inconvenience the public in general may suffer, munition workers must be conveyed to and from their work where the distances are comparatively long. Incidentally the restrictions now imposed render it all the more necessary that increases should be made in the maximum statutory tramway fares, so that fares can be raised as circumstances require. This aspect of the matter will no doubt be brought before the Parliamentary Committee, whose appointment is reported elsewhere in this issue. If fewer car-miles are run, the net income per car-mile must be increased. The mere saving of coal

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will not suffice, as standing charges continue, and wages and war allowances still tend to increase. On the whole the outlook is serious, but tramway authorities may reasonably expect the Tramways (Board of Trade) Committee to see to it that their right to as liberal treatment as the railways have received is not overlooked.

London Railways and Omnibus Traffic Alterations.

At the end of April the London Underground Railway Companies and the London General Omnibus Company announced the steps they were about to take for the purpose of saving power and light. On the railways the train services are reduced during the slack hours of the day and also after eleven o'clock at night. The earlier closing of the theatres helps in the case of the latter change. Twenty-six stations are closed every night after half-past eleven o'clock, eight stations are closed altogether on Sundays, and two are closed for part of that day. These changes are not so very serious for passengers, because there are about 200 stations on these railways, and except in the outer suburbs they are so near one another that the closing of a station here and there only means an additional walk for some passengers of a quarter or half a mile. As to the saving, fewer trains mean less power consumption. Fewer stops also mean material saving, as the energy required to start and accelerate a train, especially with the high rate of acceleration characteristic of the "Underground," is very considerable. There is also the saving of station lighting. As to the omnibuses, the economy in their case relates to petrol, a fuel ever becoming scarcer according to authoritative statements on the subject. The changes will in some ways be a convenience to the companies concerned, and if they do not aggravate overcrowding neither will the public have any great reason for complaint. The companies may be trusted to do their best to minimise inconvenience.

Tramcar Lighting.

In connection with economy of electricity for lighting purposes, there is one valuable reform which could be carried out at once, resulting not only in economy but in improved lighting. In the earlier times of air raid scares the Government orders for reduced lighting were applied to tramway car lights as well as to street illumination. The car lamps were shaded to such an extent as to become almost useless. Moreover, in London at all events, the metallic filament lamps were taken away and the old-fashioned obsolete carbon filament lamps substituted, probably because they give so little light. The shading has for some time been reduced, but even now it is only possible to read in a car at night if one is favourably placed under a lamp. The point is that now there is no necessity for shades nor is there any need for using carbon lamps. The system of warnings of impending air raids is now so complete that every car might run normally lighted to the full. As soon as a warning is received all lights on cars can be switched off. That only takes a moment, and there is ample time after the warning. A carbon lamp consumes about four times as much current per candle-power as a metallic one, and it gives about a third of the light. Let the shading be abolished, and let the metallic lamps be put back on the cars. That will cut down the current consumption for lighting to about a half. Should a timid Home Office think the light too brilliant, let only half the lamps on each car be aglow. That will reduce the current consumption to one-quarter of the present, and the lighting will be better than it is now. That the saving would be appreciable will be acknowledged when it is remembered that in the metropolitan area tens of thousands of car lamps are involved. The trains on the underground railways run in the open in the suburbs, and the restrictions of lighting in them have been abolished for some time. They run fully lighted. Why should lighted tramway cars be regarded as a greater menace ?

Restrictions in the Use of Gas and Electricity.—All communications on the subject of the restrictions in the use of gas and electricity should be addressed to Mr. Garnham Roper, C.B., assistant secretary to the Board of Trade, 7, Whitehall Gardens, London, S.W.1.

Goods Carriage at Scarborough.—The Scarborough Electric Tramways Company propose to carry fish on the tramways from the piers to the goods station, and the Government is to be asked to grant assistance toward the cost of laying down the additional track that will be necessary.

Disabled Service Men for Tramways.—The Ministry of National Service have invited the Comrades of the Great War Association to provide a large number of tramway car and motor omnibus drivers and conductors. In announcing this request the Association states :—"Men must have two arms, and be generally healthy ; one leg lost is no bar. Good pay during training." Application is to be made to the employment agent, Comrades of the Great War, 8, Grosvenor Crescent, W.

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LONDON TRAFFIC ORGANISATION.

Now that the Board of Trade have invested the Railway Executive Committee with powers designed to relieve railway difficulties by restrictions calculated to divert traffic to alternative means of conveyance, it should become easier to secure consideration for a scheme intended as a means of relief for both tramways and railways. A proposal to that end, in relation to the suburban traffic of Greater London, was recently put forward by Mr. H. H. Gordon in the *Telegraph*. This member of the Highways Committee has a thorough grasp of the transport problem, as was shown by a speech which won the approval of the Municipal Tramways Conference of 1916. He has also studied tramways and underground railways in the principal cities of the Continent, but there is no indication that his suggestions are based upon what he has seen abroad. Nor are his views tainted by partisanship. Mr. Gordon rightly states that railways, tramways, and omnibuses are not mutually exclusive in any large urban area, that they all have different functions to fulfil, and that the most efficient use of all can only be made by co-ordination. His outline of the defects arising from the absence of co-ordination is in the main accurate ; the shortcomings are the result of the absence of an authority such as would have been supplied by a Traffic Board, the need for which was conclusively demonstrated by the report of the Royal Commission presented in 1905 on London Traffic. Railways, tramways, and omnibuses, Mr. Gordon remarks, have been worked as if each was exclusively fitted to undertake all the varied tasks of modern traffic. The railways have catered for very short distance traffic, and by stopping at frequent intervals neutralise their chief advantage, the element of speed, with the result that carrying capacity is reduced and operating costs are increased. The critic, however, loses sight of what really happened in the case of the railways within the tramway zone. Traffic was taken from the former when electricity superseded horse traction. The suburban lines of the London, Brighton and South Coast Railway were electrified to meet the rivalry, whereupon the superior speed of the railway has continued to attract more passengers than were originally lost, notwithstanding the inconvenience of reaching the trains as compared with the ease of boarding a car.

Of the motor omnibus, Mr. Gordon says that "it skimmed, unrestrictedly, the cream of London traffic without discharging any statutory obligations," and that "even here the conditions were not likely to be permanent." Our observation of the omnibus day by day shows, however, that it has ceased to become an instrument for skimming traffic—pick-up traffic, as Sir Albert Stanley termed it in his paper upon London transportation presented to the American Electric Railway Congress in 1915. On the contrary, its stops are fewer than those of the tramway car, the bulk of the passengers being taken from points in Central London not served by the cars. Omnibuses running to the outer suburbs rarely pull up at stops other than those that are compulsory for the cars, and it is this fact that gives this vehicle its superior full and half-stage journey speed. Than this circumstance there could not be a more convincing argument in favour of the cars reducing the number of their stops, especially as at the present time nearly 300 cars are in the depots for want of crews and materials for maintenance.

Mr. Gordon's reference to electric railways seems to be confined to the underground lines. "For distances up to nearly two miles," he remarks, "underground traction is but little superior in speed, and inferior in comfort, to surface tramways and omnibuses." "The average passenger receipts," he adds, "indicate an approximate three-mile journey. Local railways meet, therefore, with limited success in the fight for the enormous short-distance local traffic." "Stopping twice per mile," he contends, "is therefore wrong both in principle and practice." While there is much to be said for this point of view, Mr. Gordon makes no mention of the fact that to some extent the tube railways have found a remedy in skipping stops with some of the trains. Having regard to the original ordinary fares, we cannot accept his statement that "equally unjustifiable, technically and financially, is the surface traction policy of attempting to attract long-distance passengers by cheap fares." The restored charge of two miles a penny for all-the-way passengers is not unremunerative in ordinary times, although it is less than is now charged on the railways under the lately instituted Underground revision. It is satisfactory to note, however, that for the remainder of the war the greatly increased cost of labour, etc., has induced the County Council to augment the ordinary fares to near the maximum of their statutory powers.

Mr. Gordon's remedy for what he rightly describes as wasteful competition is co-ordination. This, he asserts, can "best be secured by the following more scientific system of fares." For tramways and omnibuses he would have a "low initial fare for short distances, the rate rapidly increasing as the distance increases." For local and tube railways he desires "a high initial fare for short distances, the rate rapidly decreasing as the distance increases." It is possible, as regards tramways and omnibuses, that the remedy might prove worse than the disease. For example, it might be made to embrace the restoration of half-penny fares, which both classes of vehicle have abolished as unremunerative under present conditions, a secondary object of the abolition being the prevention of crowding out of long-distance passengers. Low fares for short distances would facilitate such crowding out, while low fares for long distances on the railways would be of little use for tramway passengers. The reason is that in nearly every instance the railway termini are inconveniently placed, and the lines are not parallel to tramway routes. Again, low fares for short tramway journeys would entail more stops and increase the loss of time on long journeys of which Mr. Gordon complains.

Although his suggested solutions of the foregoing and other problems may not find acceptance, there is room for achieving numerous reforms if the present controlling influences could be induced to adopt his suggestion for co-operation and co-ordination. This course we have often advocated, especially since the outbreak of the war, and it is encouraging to note the most practical man in the Progressive party now asserting that the effective remedy for present transit difficulties is a "great combination comprising local railways, tubes, omnibuses, municipal and company tramways, with no divergent financial interests, with the sole aim of increased and more effiicient public service." Mr. Gordon does not err when he asserts that such a reform is not one of the least important of present war requirements. Patriotism alone, to say nothing of economical working, self-preservation, and the protection of all the interests from enemy dominance, go a long way towards demanding the innovation. Now that a traction expert is at the head of the Board of Trade there could not be a more favourable opportunity for bringing the interests into conference. If an appeal for voluntary effort fails, compulsion could be resorted to.

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STATUTORY TRAMWAY FARES.

SELECT COMMITTEE APPOINTED BY THE HOUSE OF COMMONS.

Sir Albert Stanley lost no time in fulfilling the promise that he gave to the representatives of the tramway associations on April 4 to secure the appointment of a Select Committee of the House of Commons to consider the question of statutory fares. The necessity of passing the Man-Power Bill at the earliest possible moment inevitably delayed the motion for the select committee longer than was at first expected, but on Wednesday night, April 25, a committee consisting of the following was appointed :—

Captain Barrett.	Sir James Boyton.
Mr. Broughton.	Mr. Cochrane.
Sir Arthur Fell.	Mr. Nugent.
Sir William Pearce.	Mr. Rendall.
Mr. Toothill.	Mr. Watt.

The following report of the proceedings is reprinted in full from the official record :—

Lord E. Talbot (Joint Parliamentary Secretary to the Treasury).—I beg to move " That a Select Committee be appointed to consider and report whether it is expedient that some provision should be made for the temporary modification of statutory requirements with regard to the charges for the conveyance of traffic on tramways and light railways constructed wholly or mainly on public roads, in the case of undertakings whose financial circumstances have been injuriously affected by causes arising out of the war ; and, if so, on what terms and conditions, and whether by Private Bill or by general legislation."

Mr. BOOTH.—Are we to have any more of these Committees ? I do not see how this is to be defended unless there is some idea of completing the process. Will there be a Committee appointed, for instance, to deal with electrical undertakings, or with any similar subject ? It seems to me that if there are to be any others we should be told now, and I would like to ask whether there is any intention to put any other resolution on the paper, because in my opinion they should be all taken together.

The PRESIDENT OF THE BOARD OF TRADE (Sir A. Stanley).—I think there is a very particular reason why the terms of reference to the committee appointed to deal with gas charges were not framed so as to include tramway charges. They are quite separate and distinct propositions. It had been represented to me for a considerable time that there is a real need for dealing immediately with the gas question, and that matter had to be decided before the tramway question was raised. This came up later, after I had received a deputation from representatives of a very considerable number of tramway undertakings in the country, both municipal and company, who put to me that owing to the enormous rise in wages and the very heavy increase of charges for material, they had a real case for asking for consideration with respect to the charges they were making to the public. I did not feel I could take upon myself the responsibility of determining the question, particularly in view of the fact that I had previously given an undertaking to this House that the Board of Trade would not deal with the question of increased tramway fares without first referring it to this House. It is because of that pledge that I ask this House to agree to the appointment of this Select Committee to investigate this question, and determine whether or not there is ground for an increase in these tramway charges. As to whether there will be any need for dealing with other public utility undertakings later on, I am not prepared to say at this moment. I think we had better wait and see what recommendations are made both by the Committee on Gas and by this particular Committee. There is outstanding a question about the charges of electricity undertakings, and also with regard to water companies, but they are a very small number, and they can be dealt with later on. I think at the moment it would be better, and perhaps expedite matters, to limit the procedure of these two Committees at this particular moment.

The motion was then agreed to.

On the motion being made by Lord E. Talbot, " That Captain Barnett be a member of the Committee,"

Mr. BOOTH.—I have no objection to this hon. member, but I wish to point out that if a number of committees are to be appointed it will mean that a large number of business men in this House will have their time occupied at great length in dealing with what is practically one problem, and I would suggest that if other committees are set up it would be as well to reappoint the Committee now being elected, so that they may deal with all the remaining questions. It will save the time of hon. members, because the issue involved in all these committees is practically the same.

The motion was then agreed to, and the other members mentioned above were appointed.

The Committee have power to send for persons, papers, and records, and three members form a quorum.

Edgware and Hampstead Railway.—The Board of Trade has extended for one year the time for the completion of certain works, purchase of land, etc., in connection with the construction of this railway.

GOVERNMENT RESTRICTION OF SERVICES.

The following letter, signed by the Secretary, and dated April 30, has been sent by the Tramways (Board of Trade) Committee, to tramway authorities :—

COAL RESTRICTION ORDER.

The Tramways (Board of Trade) Committee have been instructed by the President of the Board of Trade to notify all tramway undertakings which supply or purchase electrical energy for tramways (within the area affected by the Order No. 366, 1918, to reduce the supply of gas and electricity by one-sixth) that they must reduce their coal consumption at once by at least 15 per cent.

In giving effect to this instruction arrangements should be made so as to secure that the transport of persons engaged on work of national importance should be interfered with as little as possible.

The following examples of means of economising coal are suggested :—

(1) Reduction of services not required in the national interest.
(2) Withdrawal of services either for a part or the whole day on Sundays.
(3) Stopping all services at an earlier hour in the evening.
(4) Partial substitution of coke, locally produced, for the coal at present consumed.
(5) Grant of a bonus to motormen for economy in power consumption.

There are probably other means of economising fuel, and my Committee invite you to submit suggestions in this regard, which may be of value to other tramway undertakings.

My Committee will be glad if you will give this matter your immediate attention, and be good enough to forward full particulars of the manner in which it is proposed to deal with the situation.

The date at which the saving should be instituted must be as early as possible, and not later than May 1, 1918.

You are requested to furnish to the Committee as soon as possible the following information for each week of the year from April 1, 1917, to March 31, 1918, and similar information for each succeeding week from the 1st inst.

(1) Number of car-miles run during week.
(2) Total coal consumed during week.
(3) Number of units generated during week.
(5) Coal consumed per unit generated (stating A.C. or D.C.)
(5) Average calorific value of coal B.T.U.
(6) The district from which coal is obtained.

My committee also desire to have this information weekly in future, for which purpose suitable forms will be supplied you in due course.

WOMEN DRIVERS IN SCOTLAND.

An erroneous impression seems to prevail with regard to the number of women employed as tramcar drivers in Scotland. We have been favoured by Major Fred Coutts, hon. secretary of the Scottish section of the Advisory Committee, Tramways (Board of Trade) Committee, with the return made up to date showing the numbers of women employed as drivers and conductors on all Scottish undertakings. The percentage of female drivers is 18·6 and of male conductors, 13.

Name of Undertaking.	Drivers.		Conductors.	
	Men.	Women.	Men.	Women.
Aberdeen Corporation ...	100	6	10	111
Aberdeen Suburban ...	6	4	—	10
Ayr Corporation... ...	5	16	1	20
Broughty Ferry ...	14	-	4	11
Coatbridge	4	9	—	20
Dumbarton	15	3	—	25
Dundee Corporation ...	95	—	—	105
Dunfermline	21	—	—	31
Edinburgh	254	—	73	244
Falkirk	7	11	—	18
Glasgow Corporation ...	1,276	230	253	1,435
Greenock	17	36	1	54
Kilmarnock Corporation	10	8	—	20
Kirkcaldy Corporation ...	23	—	3	24
Lanarkshire	17	104	—	165
Leith Corporation ...	32	21	10	52
Musselburgh	6	9	—	16
Paisley	59	—	—	77
Perth Corporation ...	15	—	15	—
Rothesay...	2	1	—	3
Stirling	4	—	—	4
Wemyss	16	-	-	18
	1,998	458	370	2,463

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BRADFORD TRAMWAYS ACCIDENT.

REPORT TO THE RAILWAY DEPARTMENT, BOARD OF TRADE.

By Major J. W. Pringle, R.E.

I have the honour to report, for the information of the Board of Trade, the result of my inquiry into the circumstances attending the accident which took place, about 6.10 a.m., on February 1, on the Allerton section of the Bradford Corporation Tramways.

I. Car No. 88 was travelling along Allerton Road, when it left the rails on the curve at the junction of that road with Chapel Lane, and overturned. I regret to report that the driver (W. Gill) was killed, and 19 passengers injured. The upper part of the car was considerably damaged; but the underframe, wheels, axles, etc., were practically uninjured.

II. The gauge of the Bradford Corporation Tramways is 4 ft.

Car No. 88 was of the single truck, double deck with top cover, vestibule type, and weighed, unloaded, about 11 tons. Its general dimensions were:—

Length, over buffers	27 ft. 8 in.
Height, rail to trolley base	16 ft. 8 in.
Wheel base	7 ft.
Diameter of wheels (tread)	2 ft. 9 in.

Its seating capacity was 22 passengers on the lower, and 38 on the upper deck.

The brake equipment consisted of:—

(*a*) Hand brake oft he usual spindle and crank type, working single blocks on each of the four wheels.

(*b*) Electric rheostat brake, worked from the controller, whereby the motors become generators.

(*c*) Spencer-Dawson power track brake, with two shoes on each rail, grooved to fit the rail, actuated by powerful springs which are normally prevented from depressing the shoes by air pressure (350 lb. on the square inch) acting on oil in hydraulic cylinders. This brake is worked from the platform by a small releasing handle.

After an accident on February 7, 1913, in which this car, while standing at the Allerton terminus, was blown over by wind pressure, the body and top of the car were rebuilt. In 1914 the frame, wheels, motors, etc., in fact, all the understructure, were renewed, two 40-h.p. Siemens motors being fitted. The car left the shops after a complete overhaul on January 26, 1918. The overhaul included the provision of new tires to the wheels.

The permanent way on this section was laid in 1902, and consisted of grooved rails, weighing 103 lb. per yard, laid on six or more inches of Portland cement concrete. The paving is of granite setts extending across the two tracks to a distance of 18 in. outside the rails; between the setts and the kerbs of the roadway the paving is macadam. The width of groove in the new rails was $1\frac{1}{8}$ in., and on the curve where the accident occurred it now varies in width from $1\frac{1}{2}$ to $1\frac{5}{8}$ in. The present general condition of the rail is adequate for speeds considerably in excess of those authorised.

The curve in question is approached from the terminus at Allerton by a length of tramway of about 1,100 yards, with an average falling gradient of approximately 1 in 13·8. Over a length of 170 yards, immediately preceding the curve, which is left-handed, the track is double and straight, and the inclination falls at 1 in 16·8. The curve has a total length of 110 feet, with radii and superelevation as follows:—

	Radius.	Superelevation.
0 to 20 ft.	800–400 ft.	... $\frac{3}{4}$ in.
20 ,, 30 ft.	150 ft.	... 1 in.
30 ,, 40 ft.	109 ft.	... $1\frac{1}{2}$ in.
40 ,, 60 ft.	100 ft.	... $1\frac{1}{4}$ in.
60 ,, 70 ft.	$92\frac{1}{2}$ ft.	... $1\frac{1}{2}$ in.
70 ,, 80 ft.	$85\frac{3}{4}$ ft.	... $1\frac{1}{4}$ in.
80 ,, 90 ft.	100 ft.	... 1 in.
90 ,, 100 ft.	133 ft.	... $\frac{1}{2}$ in.
100 ,, 110 ft.	170 ft.	... $\frac{3}{8}$ in.

The gradient on the curve falls at an average of about 1 in 25.

This section of tramway was inspected in October, 1902, and again in April, 1903. There has been no previous case of a car getting seriously out of control on the section.

III. The Board of Trade Regulations for traffic are as follows:—

(1) Speed is limited—

(*a*) To a maximum of 6 miles an hour over the whole section between the terminus and Druid's Hotel. (The latter is situated on the right-hand side of the road, about 20 yards before the curve commences.)

(*b*) To 4 miles an hour on the curve.

(2) All cars have to be brought to a standstill in Allerton Road before entering the curve on the downward journey.

Speed is also allowed up to 12 miles an hour on the 20 yards that intervene between Druid's Hotel and the above-named compulsory stop, but it is unlikely that any practical use could be made of this increase in view of the above regulations.

IV. The deceased driver, William Gill, was 30 years of age when he entered the Corporation's tramway service in the year 1902. He had previously acted as conductor on the old horse tramways, and was licensed as motorman on April 8, 1902. He had therefore 16 years' experience as motorman on these tramways, and his record was very good. He is stated to have been one of the best and most careful drivers the Corporation possessed, and this opinion was supported by all the witnesses. It is a coincidence that he was driver of the same car on February 7, 1913, when it was blown over by the wind at Allerton terminus. He commenced duty about 4.45 a.m. on February 1, and drove the car from Duckworth Lane depot to the City. The car left the City at 5.20 a.m. to make its first trip to Allerton terminus. It was a very foggy morning, and the evidence shows that it was not possible to see more than half-way across the road. The accident took place an hour and a half before sunrise.

V. The conductress, Mabel Innes, states that, on leaving Allerton terminus soon after 5.50 a.m., the car travelled down the steeper inclines at an exceptionally slow speed. At one point where the car was stopped, the driver assisted the conductress to secure the rear lifeguard, which some lads, by jumping on the back of the car, had kicked down. The car stopped at all the usual places to set down or pick up passengers: the last stop made before the accident was at Fairbank's Mill, 170 yards from the curve. The conductress states that, after leaving Fairbank's Mill, she was collecting fares and noticed nothing remarkable in the way the car travelled, until the lights went out and the car turned over very slowly on to its side.

Other witnesses prove that the car was a few minutes late at Fairbank's Mill, and up to that point had been travelling more slowly than usual. Of three passengers who travelled on the car after leaving Fairbank's Mill, two (Albert Smith and Annie Tomlinson) agree that the car travelled faster than they had ever known it, and anticipated danger on account of the speed, and the manner in which the car rocked from side to side as it entered the curve. The evidence of the third (Fred Riddihough) is not so emphatic. Frank Cowman, a pedestrian, was waiting for the car at the beginning of the curve. He stated that the sound made him think that the car started slowly from Fairbank's Mill, but gathered speed as it approached. As the car came nearer, he noticed sparks flying from the wheels. As it was actually passing, he saw the speed was too great for him to attempt to board it. Before the car left the rails the rear end appeared to lift, the lights then went out, and he heard the crash of glass, which led him to conclude that the car had overturned.

The driver, according to this witness, was standing on the front platform with his hand in the usual position. Another witness (Annie Tomlinson) seated in the left-hand front corner of the lower deck, thought the driver was leaning against the front door as the car approached the curve. She described that, whilst on the curve, the car was for some appreciable period running on two wheels.

VI. Mr. Dawson, assistant engineer, was on the scene at 7.15 a.m. The car, after the accident, lay in the centre of the roadway at right angles to and across both tramway lines. The roof faced westwards, towards Allerton. He found the first mark of derailment on the setts outside the right-hand rail, 80 ft. from the roof of the car—about 85 feet from the tangent point. This mark extended for 34 ft., and appeared for the first 14 ft. in length to have been made by a single wheel. Other secondary marks, over the setts in the interspace between the two tracks, commenced 58 ft. from the roof of the overturned car, and continued at broken intervals for a distance of 30 ft. These looked as if they had been made by axle-boxes or parts of the underframe. A third set of marks, evidently made by projections on the right-hand side of the upper deck structure, were found on the macadam surface on the south side of the roadway. These began about 42 ft. from the roof of the overturned car, and extended for a distance of 24 ft.

The position of the overturned car and the marks clearly prove that the car had begun to overturn 85 ft. from the commencement of the curve. It had by that time left the rails, and its weight was being carried on one or both of the right-hand wheels. About 20 ft. farther on the underframe or axle-boxes on the right-hand side were in contact with the setts, and 30 ft. later the fall of the car on to its right side was complete. It then seems to have slid forward on its right side for 10 to 15 ft., when some part of the upper deck came in contact with the kerb, a drain grate, and a lampost. These checked its forward movement, with the result that the rear end swung round leaving marks on the roadway of this circular movement.

Mr. Dawson examined the brakes on his arrival. The hand and power brakes were unapplied at both ends. The controller handle was in the first power notch of the forward position. There were no marks on the controller or brake handles to show that they had been in contact with anything. A number of people were about, and it was not impossible that the controller handle might have been moved, from the "off" into the "first power" position, after the car came to rest. The boxes were well supplied with sand, but there was no sand lying on the track to prove that it had been used below Fairbank's Mill. The car was eventually raised on to

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its wheels, and drawn over the rails into the depot. Further examination was made of the brakes, and I examined and tested them myself before any material alterations had been effected. All the braking equipment was in working condition. The treads of the wheels showed no signs of having been locked, and particles of granite found adhering to the circumference of the right-hand wheels indicated that they were revolving after the car left the rails.

I questioned Drivers Hetherington, Croft, and Gray, who had driven the car on four days previous to the accident. All agreed that the car was in good order, and the brake equipment thoroughly effective. The Allerton route is not, in their opinion, more difficult to drive over than other roads in Bradford Driver Chamley also gave evidence. All these drivers thought that darkness made it difficult to estimate speed accurately, but considered fog was the worst condition both for judgment of speed and for recognition of actual position on the line. Some of the drivers preferred the streets to be lighted, others found the effect of shading the street lamps on the upper parts had a dazzling effect, and advocated sufficiently powerful headlights which, except in fog, would enable drivers to recognise their position.

Mr. Stirk, traffic superintendent, gave evidence that, in order to meet Board of Trade speed regulations, drivers were instructed to descend inclines, similar to Allerton, with the rheostat brake at the second notch. In this position the brake would automatically come into operation when the speed attained 8 or 9 miles an hour. In foggy weather drivers would thereby know that their speed exceeded the limit allowed, i.e., 6 miles an hour. On this occasion, therefore, the driver should have had his controller handle in the second notch of brake effect, until the car started from the stopping-place at the end of the curve. Poles at stopping-places are marked with a numeral indicating the speed—in miles per hour—permitted. The stopping-place referred to is indicated by the fare stage sign, and is situated at the entrance to a private house opposite Chapel Lane, nearly at the end of the curve, and not at the commencement. Driver Gill had not been kept from work by sickness since April, 1917. Mr. Stirk thought it possible that on this occasion he misjudged his position owing to the fog, and was thrown off his balance when the car struck the curve. This involuntary movement on his part might account for the position of the controller handle at the first notch of power. If the speed had been 8 or 9 miles an hour when the car struck the curve, the acceleration due to application of one notch of power might, he thought, have been sufficient to induce overturning.

VII. The number of passengers on the lower deck was about 20, on the upper deck, from 10 to 12. Mr. Dawson has calculated that with this number of passengers the centre of gravity of the car is 4 ft. 7¾ in. above rail level. If this be correct, the theoretical speed required for overturning on this gauge on a curve with a radius equivalent to 67 deg. is about 23·5 miles an hour—disregarding superelevation, the beneficial effect of which is certain to have been lost before danger from overturning became imminent, owing to depression of the springs as the result of centrifugal force. It is possible, however, that the height of the centre of gravity, always difficult to calculate in a vehicle of this description, has been underestimated. Personally, I think it would be found to be higher, if a test were made by swinging the car. I notice also that there were inequalities of superelevation, which, though slight, would increase the tendency of a car to rock from side to side, and set up a swinging movement of the centre of gravity. Combined, possibly, with some oversensitiveness of the spiral type of spring, and movement of live load of passengers, overturning would result—and, I think, in this case it did take place—at a speed considerably below that required by theory.

It is difficult to understand why so careful and experienced a driver permitted the car to attain a high speed at such a spot. I do not think that, if he had been following the rule prescribed of keeping his electric brake at the second notch, the inadvertent application of one notch of power, as suggested by Mr. Stirk, would have accelerated the speed from (say) 8 or 9 to possibly 18 miles an hour in a distance of about 50 feet on a curved track, even with a falling gradient of 1 in 25. On the other hand, I think it not improbable that the driver mistook his position in the section, owing to darkness and fog, and imagined, when he left the stopping-place at Fairbank's Mill, that he was leaving the fare stage at the end of the curve opposite Chapel Lane. In this event, he would normally have moved his controller from the second position to power, and, travelling down the hill, would have attained a high speed by the time he reached the curve.

The only alternative explanation is that the driver was suddenly taken ill. In support of this theory, there is the uncorroborated evidence of a witness, who stated he was leaning against the front door. In this position he would not be within reach of the brake handles. There is also the circumstance that, judging from the position of the body under the side of the car, deceased appears to have been thrown off the platform. Natural instinct has in similar cases often enabled a driver to save himself from being thrown off.

VIII. In addition to restricted lighting, I was informed that all street lamps (gas) in Bradford have during the present winter been kept extinguished between 11 p.m. and daylight. These regulations, though they may be considered necessary with a view to economy, and to the possibility of an air attack, make tramway traffic difficult and reduce safety conditions, especially on moonless or foggy nights. Danger points, at least, require to be lighted during traffic hours.

IX. I conclude that this accident was caused by speed very much in excess of that authorised, and that there was no failure in brake or other equipment to account for the high speed attained. Fog and darkness appear to have been contributory factors, to the extent that the driver may have mistaken his actual whereabouts.

I make the following recommendations :—

1. That the pole indicating the compulsory stopping-place be altered in position to accord with the wording of Bye-law II. (20), and the stop properly enforced in future.

2. That the following alterations be made in the speed regulations :—

(*a*) Para. (h), under 12 miles an hour, to read :—" In Allerton Road, between the east end of the curve at Chapel Lane and Four Lane Ends."

(*b*) Para. (i), under 6 miles an hour, to read : —" In Allerton Road, between Stoney Lane and the west end of the curve at Chapel Lane, on the downward journey."

3. That danger points, such as Board of Trade compulsory stopping-places, be indicated at night by some method of lighting. I suggest a red lamp be used.

I have, etc.,

The Assistant Secretary, J. W. PRINGLE
Railway Department, Board of Trade.

SOME NOTABLE INDIAN UNDERTAKINGS.

LARGE HYDRO-ELECTRIC POWER SCHEMES.

Lord Sydenham, who had intended to preside at a recent meeting of the Society of Arts, in his letter of regret at his enforced absence wrote :—" From the first I have taken a warm interest in the great undertakings of the Tata Company. They have shown that steel of the highest class can be made in India on a great scale. . . . The hydro-electric installation in the Bombay Presidency is the finest of its kind in the world, and it has proved what Indian capital can accomplish under wise and sound direction." These undertakings were described at two meetings of the Society, both presided over by Lord Lamington, the former Governor of Bombay.

The late Mr. Jamsetii Nusseranji Tata was born in the Baroda State in 1839, and came of the Zoroastrian priestly caste, renowned for their doggedness and perseverance. He founded a cotton mill in Nagpur, followed by new mills and other enterprises, all eminently successful. After 1905 he resolved to realise the three great ambitions of his life, which he had been revolving in his mind for twenty years. These were (1) the smelting and conversion into steel of the iron ore known to exist in large quantities in India ; (2) storage and utilisation for industrial purposes of the immense monsoon waters which fall annually on the Western Ghats ; (3) institution of a scientific research laboratory. He died before these aims were accomplished, but his work was and is being carried on by his cousin and his two sons, who have both been knighted.

The works as far as they have progressed were described by his English assistants, Messrs. H. M. Surtees Tuckwell, M.I.Mech.E., agent in England for the iron and steel works of Messrs. Tata, Limited, and E. S. Woollard Moore, Assoc. M.Inst.C.E., colleague of Mr. Alfred Dickinson, M.Inst.C.E., consulting engineer to the Tata Hydro-Electric Power Company, Bombay.

The ironworks have been established on a site some 150 miles from Calcutta, and close to iron ore and coal mines ; they are on a healthy site, with plenty of water available, and served by the Bengal-Nagpur railway. Here the company have already turned out many thousand tons of steel rails, and are preparing to manufacture all kinds of other iron, steel, and chemical products. They offer facilities in the way of land, power, raw materials, and rail carriage, and invite the establishment of factories on their estate of twenty square miles. This invitation has already been accepted by an English firm in a very large way of business.

The Bombay hydro-electric installation has contracted for 100,000 H.P. derived from storage lakes formed in the hills. Lighting and power is distributed to 36 mills and to the Bombay Tramways. The current is delivered at ½d. per unit, and the company are paying 7 per cent. on their capital. The company are prepared to instal and maintain electric power for any applicant. A second project has been started by Messrs. Tata, Sons and Company further down the West Coast of India. Here will be established the biggest electro-chemical industry in the world, with 350,000 H.P. available. The company do not propose themselves to start various industries, but to provide electric power and to assist industrial enterprises, whether in the production of aluminium, nitrogen, tungsten, chromium, caustic soda, tin, glass ware, sulphuric acid, or phosphorus. Further projects are being considered for a total development of one million horse-power on the West Coast.

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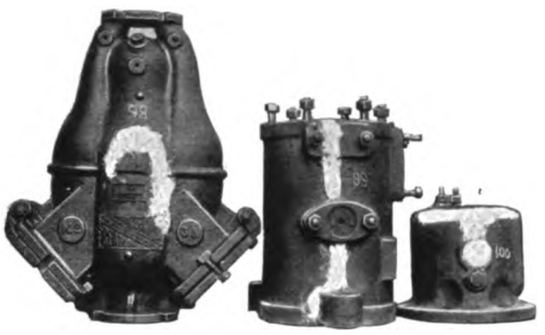
THERMIT WELDING.

EXTENSIONS OF THE THERMIT COMPANY'S OPERATIONS.

In view of the appointment by the Government of the Tramways (Board of Trade) Committee in order to provide for the needs of tramway undertakings as regards maintenance, etc., the present position of Thermit, Limited, is of considerable importance. The work carried out by this company in the welding of rail joints has undoubtedly contributed towards many tracks sustaining as well as they have done the increased traffic brought about by the war.

Cast-Iron Cylinder, Showing Finished Repair.

Now that the problem of priority for materials has been relegated to the practical men constituting the Tramways Committee, instead of being dealt with more or less unsatisfactorily by a branch of the Ministry of Munitions, there will probably not be so much difficulty in securing the aid of Thermit, Limited, and of the materials supplied by the company, for the repair of rails in certified instances. This is a more hopeful outlook than the position of the past two years, for the numerous tramways suffering from track defects and the consequent result of more frequent repairs to rolling stock. Up to



Repairs to Iron Castings.

the present these undertakings—and their number is large—have had to take their chance of securing a Class "A" certificate of the Ministry of Munitions before the company could be asked to make deliveries to tramways which have undertaken their own welding with Thermit materials, and the same restriction has also operated to debar the company from carrying out welding contracts.

The welding operations have so often been described and illustrated in this journal that they need not be further referred to,

Extension Piece Welded on to Arm of Steel Casting.

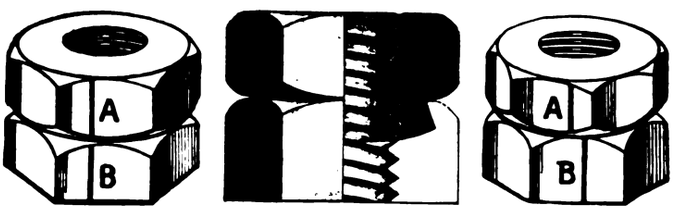
except to note two considerations. The first is that the system is not only of utility for new and reconstruction work, but the company are now able to place at the disposal of tramway managers and engineers a satisfactory process of welding existing rails. The work lengthens the life of the rails and track, ensures a permanently smooth rolling surface, and prevents the knocking noise resulting from cars passing over uneven points. Further, it gives a perfect and permanent electrical conductivity without the use of bonds. These satisfactory results have not only been demonstrated in many towns in this country, but in numerous instances in the Dominions and Colonies.

It cannot be made too widely known that Thermit, Limited, as the result of recent changes in the proprietorship, now occupy an immensely strengthened position. In addition, the variety of their operations has been widened. The undertaking is now owned by Messrs. Nobel's Explosives Company, Limited, and is under the particular supervision of the Birmingham Metal and Munitions Company, engineers, contractors and metallurgists, a subsidiary company of Messrs. Nobel. Thus the sphere and influence for Thermit products has been greatly extended. The company have their London works at 675, Commercial Road, E.14, where the business was established in 1904. The foundry supply and repair department has been much developed as a consequence of the increased national industrial activity. A point to be noted in this connection is that Thermit, Limited, have a laboratory connected with the works. The supplies furnished to numerous foundries include high-class metal and alloys, while there has been a great call upon the Thermit foundry for the welding of broken castings and forgings. This neat and reliable process has saved much valuable time and effected considerable economy in Government and other establishments through enabling steel and iron machinery, etc., to be re-started much sooner than would happen if new parts had to be awaited.

The effectiveness of the welding and its appearance are well indicated in the illustrations given on this page. Another departure in the activities of Thermit, Limited, is the welding of damaged and fractured motor wheels, and it will interest managers of road motor enterprises to learn that omnibus wheels are successfully dealt with by that method as well as the wheels of heavy industrial vehicles.

THE IMPORTANCE OF LOCK-NUTS.

The use of locking nuts that really lock is perhaps even more essential for vehicles engaged in street traffic than it is in most other directions where mechanism in more or less rapid motion is employed. There are many inventions on the market designed to meet this keenly-felt want. Some of them achieve the desired end tolerably well, but few are free from objection of one kind or another. The essential features of the Vislok, however, are such as to place it in a class entirely by itself. It possesses the valuable quality of simplicity to a remarkable degree, considering how thoroughly it accomplishes its purpose. The Vislok is scientifically correct in design and does not violate the principles of mechanics. It is, in fact, a safety lock nut; not merely an ingenious device. Essen-



UNLOCKED **The Vislok Nut.** LOCKED

tially it consists of two inter-connected and continuously threaded sections. Where the upper and lower sections meet, a full turn of the thread is divided; therefore the top section can rotate on the lower. When rotated the thick part of the divided thread (right hand) approaches the thick part (left hand) of the same thread in the lower section, the latter being held stationary. This action is equal to forcing a wedge-shaped thread into an almost wholly preoccupied space—the bolt thread. The distance it can be forced in depends only on the amount of slack between the Vislok nut and bolt threads. All threads above the wedge thread are firmly pressed against the underside of the bolt threads. The remarkable degree of security thus afforded is gained without the aid of any loose parts, the upper and the lower section being inseparable and no tool other than an ordinary spanner being needed for operating. The fact that the Vislok has been adopted by the Admiralty, the Ministry of Munitions, and by Government Departments and public utility, mining, and engineering undertakings is proof of its practical merits. It is manufactured for all sizes of bolts by Vislok, Limited, St. Bride's House, Salisbury Square, London, E.C.4.

Overturned Car at Brentford.—A car of the London United Tramways Company was overturned in High Street, Brentford, near the gasworks, on Sunday, April 21. The weather was very wet at the time, and all the passengers were inside. After leaving the rails the car ran on to the footpath and, colliding with a standard, fell over on its side. Eleven passengers were somewhat injured, but after being attended by a doctor they proceeded to their own homes.

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LIFTING GEAR FOR TRAMWAY CARS.

Few tramway managers appear willing to provide efficient means of lifting gear, either for ordinary use or for emergency purposes. This is in many cases due to lack of appreciation of the various and efficient tools which are at their disposal for the purposes. Many an accident would have been more easily dealt with had a jack been at hand which would have enabled the car to be lifted. This has been brought up again and again at inquests and we have frequently raised the point in these columns, so that it can scarcely be claimed that the suggestion has not been put forward. That tramcars are allowed to run without any means of lifting them being provided in case of accident reflects seriously upon those in charge. It is the duty of everyone engaged in tramway operations to do everything possible to reduce the number of accidents, and especially fatal ones, and we make no apology for impressing the point again and again. How oft may the antiquated crowbar and packing block still be seen in tramway depots, despite the saving in time, labour, and wear of equipment that can be effected by the use of the lifting jack.

The accompanying series of illustrations of the well-known Simplex jack will show to the tramway manager how useful the tool is in every-day practice. Fig. 1 shows the No. 51 Simplex jack applied to lift the end of a car body, taking the weight off the truck springs. Fig. 2 shows the Simplex jack No. 55, a type very popular with tramway men. It is fitted with an adjustable shoe, which is quickly put into position upon the rack and is here shown taking a lift under the axle box of a Brill truck. The whole operation of placing the jack in position and lifting is performed in less than 30 seconds. This jack has been adopted by the Manchester tramway system and is carried upon the cars for use in an emergency. It is also used on many other systems. Fig. 3 shows the emergency type Simplex jack. These jacks are furnished with a hinged base, which greatly increases their usefulness. They are further fitted with a detachable hook and chain, which are shown in Figs. 3 and 4 respectively, and it will be noted how the hinged base dispenses with packing. Not only can this jack be used for lifting but also for pushing and pulling, and it is consequently most valuable for rerailing purposes when another jack can be used to take the weight.

The Simplex jacks are supplied by the Equipment and Engineering Company, of 2 and 3, Norfolk Street, Strand, London, W.C.2, and those interested may obtain further particulars from them.

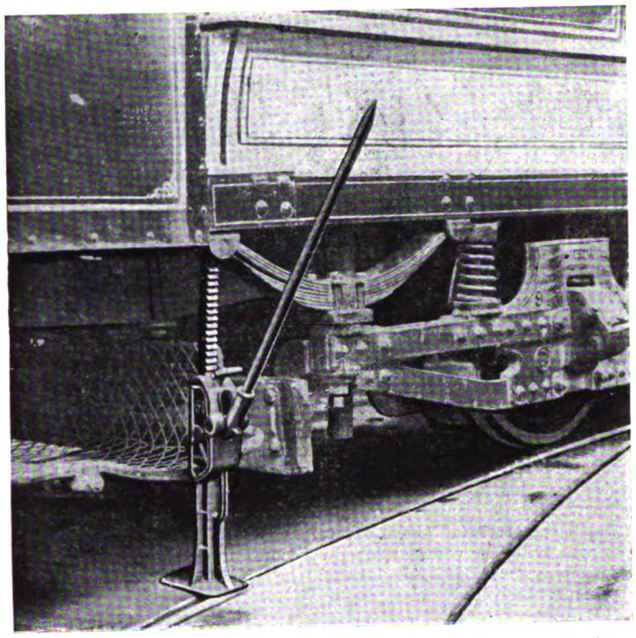

Fig. 1.

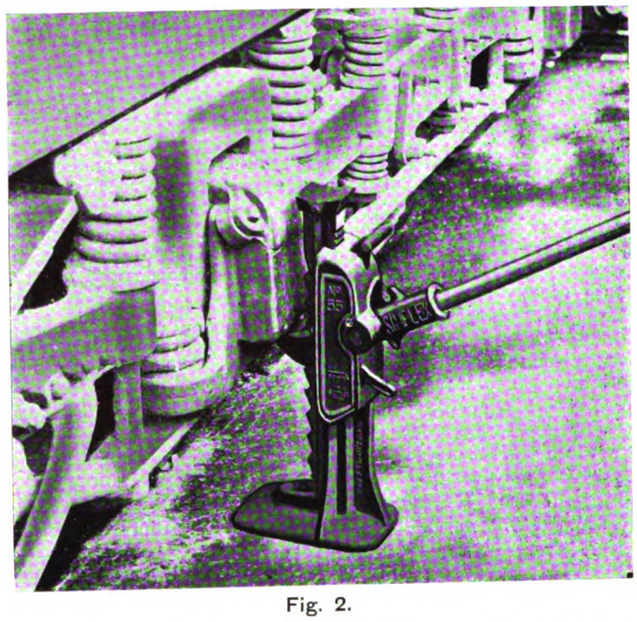

Fig. 2.

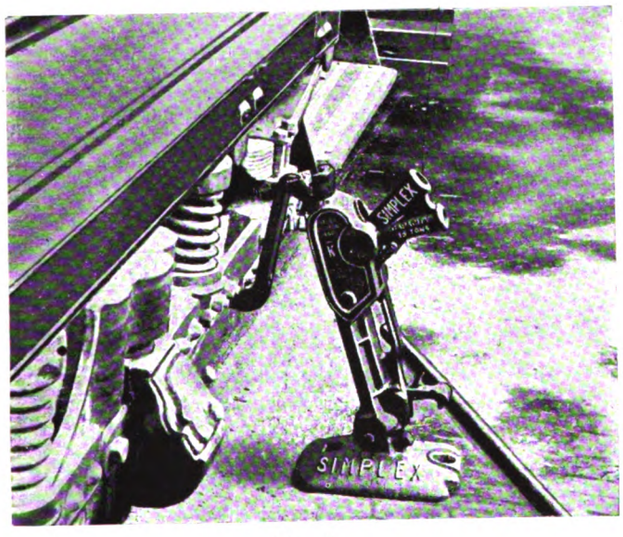

Fig. 3.

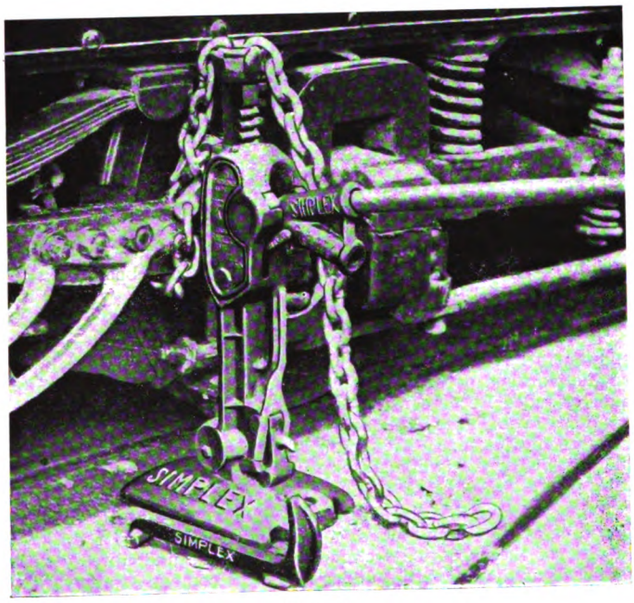

Fig. 4.

Metropolitan Association of Electric Tramways Managers.—A meeting of the members of this association was held at the Municipal and County Club, Whitehall Court, Whitehall, S.W., on Friday, May 10, when there were present:—Messrs. W. C. Ullman (East Ham), chairman; W. E. Hammond (Met. Electric), vice-chairman; Slattery (West Ham); F. Schofield (Leyton), W. Murray (Walthamstow), A. V. Mason (South Metropolitan), L. E. Harvey (Ilford), W. Mackinnon (London United), R. Birkett (Southend-on-Sea), and T. B. Goodyer (Croydon), hon. secretary. Letters of regret at their inability to be present were received from Messrs. Bruce (L.C.C.), Williams (Erith), and Stokes (Bexley Heath). Various matters of interest were discussed.

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FINANCIAL REPORTS AND MEETINGS.

Val de Travers Asphalte Paving.—The directors recommend a further dividend of 4½d. per share, less tax, making 7½d. per share, or 3 per cent., for 1917.

Johnson and Phillips, Limited.—A dividend of 7 per cent. per annum on the ordinary shares, free of tax, has been declared. A balance of £13,565 is carried forward.

Birmingham Small Arms Company.—An interim dividend for the half-year ended January 31 on the ordinary shares at the rate of 5 per cent., free of tax, has been declared.

Oldham, Ashton and Hyde Tramways.—A dividend of 3½ per cent. has been declared on the ordinary shares, making 6 per cent. for the year. The rate has not varied for the past 13 years.

British Westinghouse Electric and Manufacturing Company, Limited.—A dividend at the rate of 7½ per cent. on the preference shares is recommended for the year ended December 31, 1917.

Para Electric Railways and Lighting.—The directors announce a further dividend of 4 per cent. on ordinary shares, making 7 per cent. for the year ended November 30, as compared with 6 per cent. last year.

Bombay Tramways.—The directors of the Bombay Electric Supply and Tramways Company recommend a dividend on the ordinary shares at the rate of 10 per cent. for the year 1917, together with a bonus of 4 per cent.

London and Suburban Traction Company.—The directors have decided to recommend a dividend of 2½ per cent. on the preference shares for the year ended December 31 last. The annual general meeting will take place on June 5.

Greenock and Port Glasgow Tramways Company.—Including £3,201 brought forward, the accounts for the year ended December 31 show a net profit of £19,977. The directors recommend a dividend of 8 per cent., same as for the previous year. It is proposed to place £3,500 to reserve, carrying forward £2,000.

Halifax Tramways.—The financial year of Halifax Corporation Tramways, which ended on March 31, constitutes a record from the point of view of revenue. From tramway passengers the receipts amounted to £126,506, an increase of £14,480. The passengers carried numbered 22,822,341, an increase of 1,641,757, although the car mileage run was 1,869,367, a decrease of 179,415.

Mirrlees Watson Company's report for 1917 states that the credit balance, after deducting depreciation, directors' fees, and other provisions, amounts to £32,022; £6,961 was brought forward, making £38,982. The directors recommend a dividend of 10 per cent. and a bonus of 2½ per cent., both less tax, and that £20,000 be transferred to general reserve account, leaving £7,264 to be carried forward.

Lancashire Dynamo and Motor Company.—The report for 1916, which has recently been issued, shows a profit of £29,320, after providing for interest, income-tax, and special war expenditure, and including £1,450 brought forward. Dividends and bonus, making 12½ per cent. free of tax for the year, have been paid, the reserve has been increased by £8,000, bringing it to £50,000, and £6,791 has been carried forward.

New South Wales Railways and Tramways.—The Railway Commissioners have presented to the State Government their report on the working of the Government railways and tramways for the quarter ended December 31. The railway revenue was £2,422,751, an increase of £426,416, and the expenditure £1,584,956, an increase of £93,522. The tramways revenue was £518,607, an increase of £17,767, while the expenditure was £421,592, a decrease of £14,617.

Gateshead and District Tramways Company.—Mr. H. S. Day, presiding at the annual meeting, said that the results for the year, in view of the exceptional circumstances, were undoubtedly satisfactory, but the difficulties under which the company were working were increasing owing to the heavy demands for labour and the increased cost of materials. There had been a considerable expansion in traffic during the year, but the expenses had also increased. Of their investments of £60,713, £41,000 was in national securities.

Leeds Tramways and the Rates.—At a meeting of Leeds City Council on March 27, Alderman C. H. Wilson moved that the city rate be 10s. 6d. in the £, an increase of 1s. 6d. He said that the main factor in the proposed increase was the very much larger sum, roughly £200,000 a year, paid in wages. A lively attack was made on Alderman Wilson's proposal in regard to the tramway undertaking. The Tramways Committee estimate their profits at £39,000, but Alderman Wilson put them at £58,000. It was contended that it would be more straightforward if the rates were raised by 1s. 11d. or 2s., in accordance with the necessity. Alderman Wilson denied any intention to raid the tramway reserves, which amount to £106,000. The proposal to increase the rates by 1s. 6d. was carried.

Metropolitan Electric Tramways.—The report for the year 1917 shows that the revenue amounted to £594,085. After adding the balance brought forward from 1916, and deducting all expenses chargeable to revenue, including a provision of £22,687 for future reconstruction and renewals, there remains an available balance of £22,910, which the directors recommend should be appropriated as shown in the account, viz., to be placed to reserve account, £9,874; to dividend on preference shares at the rate of 2 per cent. for the year, £10,000; to be carried forward, £3,036. The traffic receipts amounted to £542,531, and show an increase of £38,192. Early last year the fares on the whole system were increased, but the revised scale did not become operative until the beginning of February. The directors state that further increases will have to be made if the company is to be in a position to meet the continual increase in the working expenses. Owing to a decrease in the net revenue the directors were unable to declare an interim dividend on the preference shares, and the result of the year's operations permit of the payment of only 2 per cent. on the preference capital.

London United Tramways.—The report for the year ended December 31, 1917, states that the gross receipts amounted to £354,472, an increase of £18,137 as compared with 1916, but owing to the advance in the cost of material and labour, the expenses have further increased by £23,595. After deducting the adverse balance of £2,538 brought forward from 1916 and all expenses there is a balance of £60,028, which is required for carrying out repairs and renewals whenever it becomes practicable. Charges for interest on first mortgage debenture stock and loans amount to £71,626. As a result of the proceedings referred to in the last report, Mr. F. S. Price, of Messrs. Price, Waterhouse and Company, was on June 5 last appointed by the Court to act as receiver of the company's undertaking and the net receipts thereof. Since that date negotiations have been carried on by the directors, with a committee appointed by the 4 per cent. first mortgage debenture stockholders, with a view to the reconstruction of the company's capital and rehabilitation of the tramways undertaking. These negotiations have resulted in a provisional arrangement under the terms of which, subject to the Bill now before Parliament passing, both the loan and share capital will be substantially reduced, and funds will be provided for the reconstruction and renewal of the tramways. Full particulars will be given to the shareholders as soon as possible.

Leicester Corporation Tramways.—In his report for the year ended December 31, 1917, Mr. A. F. Lucas, manager and secretary of Leicester Corporation Tramways, says that during the year there was an increase in passenger receipts of £15,680, owing to the exceptionally good trade in the town and increased fares. On the other hand, the working expenses had increased by £19,629, due to increased cost of power supply, war bonuses to employees, and the higher price of materials. The gross profit amounted to £71,065, as compared with 63,316 in the previous year. After deducting interest, sinking fund, income-tax, and war allowances to employees, there is a net credit balance of £9,320. Mr. T. Robert Smith, electrical engineer and manager, writes that the increased price of fuel and increased wages have had an adverse influence on the generating costs. The average cost per unit was ·7820d. A comparison of the results for the past five years is appended:—

	1917.	1916.	1915.	1914.	1913.
Traffic revenue	£191,636	£175,956	£159,678	£149,664	£147,458
Other revenue	52,012	40,315	28,842	20,571	17,059
Total	£243,648	£216,271	£188,520	£170,235	£164,517
Working expenses	172,583	152,954	122,142	118,607	110,115
	£71,065	£63,317	£66,378	£51,628	£54,402
Add Bank Interest	—	157	355	—	416
Reserve fund interest ...	—	—	—	1,660	3,346
Gross balance	£71,065	£63,474	£66,733	£53,288	£58,164
Interest on mortgages, etc.	26,028	25,298	26,229	24,010	23,541
Redemption of debt ...	16,573	16,574	16,647	13,765	12,453
Income-tax	7,337	7,401	4,484	2,801	2,122
Bank interest	540	—	—	207	—
War allowance, reservists, etc.	11,266	12,044	7,412	1,284	—
Net balance	9,321	2,157	11,961	11,221	20,048
	£71,065	£63,474	£66,733	£53,288	£58,164

From statistics given in the reports the following items have been extracted:—

	1917.	1916.	1915.	1914.	1913.
Units per car-mile	1·95	1·96	1·97	1·82	1·77
Power cost per car-mile ..	3·203d.	2·574d.	1·927d.	1·480d.	1·431d.
Traffic receipts per track mile	£5,043	£4,630	£4,202	£4,045	£3,985
Traffic receipts per car-mile	12·025d.	10·279d.	9·827d.	8·682d.	8·758d.
Expenses per car-mile ...	10·830d.	8·935d.	7·516d.	6·880d.	6·560d.
Ratio of expenses to revenue	70%	71%	65%	69%	66%
Total track mileage ..	38	38	38	38	38
Number of cars in stock ...	160	160	160	160	150

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Stewarts and Lloyds, Limited.—The report for the year ended December 31 last states that after again setting aside £100,000 for depreciation, and making provision for estimated liability for excess profits duty, net profit amounts to £285,894, against £259,398. The directors place to reserve £100,000, against £60,000; to employees' benefit fund £20,000 (the same), and recommend a dividend of 2s. per share on the deferred shares, free of tax, and bonus of 6d. per share, carrying forward £105,892, against £111,122 a year ago, when the distribution was the same. Application had been made to the Treasury for sanction to issue the balance of the authorised deferred share capital, amounting to 425,000 shares of £1 each, at 20s. per share; the directors have now received sanction. The shares will be offered on June 17 to holders at that date of the deferred shares already issued, in the proportion of one share for every share held, and are to be paid for in full on July 1.

Bristol Tramways and Carriage Company.—In moving the adoption of the directors' report (a summary of which has appeared in our pages), Mr. Samuel White, at the meeting of this company, said that they had been devoting themselves to work of a nature altogether outside the ordinary sphere of the company's operations. They had, as a matter of national urgency, set aside the great bulk of their ordinary affairs indoors as distinct from the traffic in the streets. They had been devoting themselves to the execution of national work of the greatest possible urgency and importance, and it was increasing in size. The censor would not allow him to go into details of their output. Last year he reported that they did in 1916 twice or three times as much as in 1915. That day he was able to say that in 1917 they had carried out from twice to three times as much of that class of work as in 1916. Having reviewed the details of the accounts, he proposed a dividend of 7½ per cent., tax free, with £30,000 carried to reserve, and £18,152 carried forward.

Southampton Tramways Finance.—Alderman Hollis, moving the adoption of the borough rate at a meeting of Southampton Town Council, mentioned that the estimated expenditure on the tramways a year ago was £69,266, the actual amount expended being £77,374. The estimated income a year ago was £86,600, but this actually realised £110,483. The balance carried forward to meet interest and sinking fund charges, estimated at £17,334, realised £33,109, £18,246 being required, leaving a balance of £15,024 to be transferred to the depreciation and renewal fund. The Tramways Committee had decided to contribute £7,920 towards the reduction of the rates, which was equivalent to a threepenny rate. They proposed to transfer £379 to the tramway third party insurance fund, making the total standing to the credit of that fund £5,000, the remaining balance of £6,825 being placed to the credit of the depreciation and renewals fund, bringing that fund up to £24,287. The Tramways Committee had arranged for the purchase of six additional cars from the London County Council at an estimated cost of £4,000, and had adopted the policy of paying this sum out of the depreciation and renewal fund. The amount standing to the credit of the latter fund would thus be over £20,000, a record in the history of the tramway undertaking. The expenditure for the coming year was estimated at £92,964, being an increase of £15,590 over last year's working expenses, while under the head of income the committee anticipated to receive £112,150, or an increase of only £1,665 over last year's results, leaving a gross profit of £19,186, against £33,109. It was estimated, after providing for the sinking fund charges, that there would be a balance of £1,150 to be transferred to the depreciation and renewal account.

Bradford Tramway Results.—At a meeting of the Bradford Corporation Tramways Committee, a statement of the results for the financial year was submitted. The statement, which shows a comparison with the preceding year, is as follows:—

	1917-18.	1916-17.	Inc. or Dec.
Traffic receipts	£361,912	£322,634	£39,278 +
Railless electric traction ...	12,249	10,706	1,543 +
Miscellaneous	5,096	4,076	1,020 +
Parcel Dept.	13,130	10,747	2,384 +
Total	£392,388	£348,163	£44,225 +
Number of days (days not worked, 5)	360	364	—
Mileage run	5,905,356	6,086,770	181,414 −
Average receipts P.C.M. ...	15·94d.	13·72d.	2·22d. +
Units consumed for traction	12,399,514	12,286,390	112,924 +
Average units per car-mile	2·099	2·018	1·081 +
Passengers carried	84,129,252	77,074,546	7,054,706 +
Total wages paid	£190,530	£158,155	£32,375 +
Included in—			
Total bonus paid	53,514	22,087	31,427 +
Total dependants' allowances	21,272	14,376	6,896 +
Total sick pay	3,536	4,351	815 −

The number of parcels carried was 598,902, as against 644,064, a decrease of 45,162.

CONTRACTS AND ORDERS.

Heywood Town Council propose to purchase a motor fire engine.

Mavor and Coulson, Limited, have an order from Glasgow Tramways department for commutators.

The Manchester Corporation Motor Ambulance Sub-Committee are purchasing a second-hand six-cylinder motor car for use as an ambulance.

Electromobile (Leeds), Limited, Neville Street, Leeds, are supplying two 3½-ton tipping wagons to Bootle Corporation, and one 2-ton chassis for Oldham Corporation, to be fitted with an omnibus body.

Electromobile (Leeds), Limited, have an order for one 5-ton electric tipping vehicle with lead battery, at £1,430, for use for the removal of ashes from Dalmarnock generating station of Glasgow Corporation.

Dick, Kerr and Company, Limited, are to repair for Glasgow electricity department two 3,000-KW. turbine sets at a price of £23,000. The sets have been in use for over fourteen years at Port Dundas.

Wolverhampton Corporation's electrical engineer has suggested a plan for the transport of coal from the railway siding adjacent to the electricity works, which has been approved, and automatic plant, rails, etc., are to be purchased.

The Chloride Electrical Storage Company have supplied Ironclad-Exide batteries for vehicles for the London and North Western, the Midland, the Great Western, the Great Northern, the Lancashire and Yorkshire, the Great Eastern, and the Great Central Railways.

Derby Electricity Committee have accepted the following tenders:—British Thomson-Houston Company, Limited, switchgear, £2,924; Chain Belt Engineering Company, ash elevator and crusher, £950; Babcock and Wilcox, induced draught fan, etc., £805; W. Abell, penstock, £320.

Orders for Electric Vehicles.—Rochdale Corporation has applied to the Local Government Board for sanction of a loan for the purchase of three electric tipping wagons. Derby Corporation has accepted the tender of the General Vehicle Company for two G.V. electric tipping vans, at £2,810. Bolton Corporation Cleansing and Sewage Committee have ordered from Drake and Gorham, Limited, an electric wagon. Kesteven County Council has been given permission by the Control Board to purchase a tipping wagon at an estimated cost of £993. The West Norfolk Highways Committee have accepted the tender of the Eagle Engineering Company, of Warwick, for two 5-ton side tipping wagons, and that of Messrs. Charles Burrell and Sons, Thetford, for a 5-ton steam tractor.

London County Council Contracts.—At the meeting of the London County Council on April 23, it was reported that the following orders had been placed:—

Walter Scott, Limited, for the supply of 175 tons of track rails at an extra cost over their contract price, and for any further quantity at the same price up to 825 tons, making 1,000 tons in all, which the Council may decide and be permitted to order before March 31, 1919. Deliveries are to be made in accordance with the terms of the contract except as regards price and time of delivery, and to be accepted *pro tanto* in fulfilment of the contract, the placing of an order for 175 tons or any further quantity not to be construed as an order to commence the delivery of the 3,200 tons referred to in the contract of April 14, 1915.

Messrs. R. Cort and Company, two cutting coke machines at a cost of about £200 each, the cost of the erection thereof being about £150.

J. Hopkinson and Company, Limited, two parallel slide blow-off valves for boilers at £24 7s. 6d.

Babcock and Wilcox, Limited, 32,720 stoker kilns for chain grates of boilers at £735.

Willans and Robinson, Limited, the blading of two turbine generators at a cost of £25 2s. 2d.

Frodingham Iron and Steel Company, Limited, for 620 tons of conductor tee rails at £18 15s. a ton.

H. Bessemer and Company, Limited, and Cammell Laird and Company, Limited, each for the supply of 2,250 driving wheel tires at £3 11s. 9d. each, and 1,500 pony wheel tires at £3 2s. 9d. each.

Western Electric Company, Limited, re-sheathing 3,500 yards of cable at actual cost, plus 10 per cent.

Pease and Partners, Limited, for 500 tons of brake shoes for tramway cars, at £13 15s. a ton, during the six months ending June 30, 1918. The total expenditure will amount approximately to £6,875.

Midland Electric Wire Company and the British Insulated and Helsby Cables Limited, for the supply of cotton-covered copper wire, at £2,515 and £4,436 respectively.

Armstrong, Stevens and Company, Limited.—Order for the supply of 330 rocker levers at 12s. was extended to include 370 additional rocker levers at 16s. each.

The following expenditure for re-winding armatures for electric tramway cars was approved:—P. R. Jackson and Company, £166 5s.; H. Dunn and Son, £359 10s.; the Electrical Repair Company, Limited, £393 10s.; Burdette and Company, £807 13s. 6d.; Collins Electrical Company, Limited, £323 10s.

The tender of the British Electric Transformer Company, Limited, was accepted for the supply of a set of reactance coils for one of the transformers supplied to Woolwich Arsenal sub-station in connection with the supply of power from Greenwich power-station.

Further Demands of Tramway Employees.—Representatives of municipal tramways met at the Surveyors' Institution in London to consider the application that will shortly be made by the tramway employees throughout the country for a 12½ per cent. bonus. The meeting was private. The arbitration which was agreed upon some time ago by the authorities of the Lancashire tramways and of the employees' union has not been held, and apparently it is intended that no action should be taken until a national demand is made. The situation is a difficult one, and is not made easier by the fact that at least one Corporation has already granted an increase of 12½ per cent. to its employees.

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PERSONAL.

Mr. G. E. Sendell has retired from the Board of the National Steam Car Company.

Mr. J. K. Brydges, borough electrical engineer, Eastbourne, has been granted an honorarium of £50 for extra work.

Mr. A. T. Lambert, tramways manager of Maidstone, has been granted an increase of £100 in salary to £400 a year.

Mr. Barnes Kay, manager of Haslingden electricity and tramways department, has been granted an increase in salary.

Mr. J. W. Hame, tramways manager and electrical engineer, of York, has been granted an increase in salary of £100.

Mr. F. J. B. Hoskens has resigned the management of Darwen tramways, and a successor is being sought at £250 a year.

Mr. J. F. Simpson, tramways engineer and manager of Preston Corporation, has been granted an increase in salary of £100.

Mr. J. W. Turner, electrical engineer of Huddersfield Corporation, has been granted an increase in salary from £400 to £500 per annum.

Mr. J. F. Cameron, general manager of Northampton Corporation Tramways, has been granted an increase in salary to £400 a year.

Mr. E. Manville, chairman of the Daimler Motor Company, Limited, has been elected president of the Associated Chambers of Commerce.

Mr. W. Fennell has been appointed engineer and secretary to Northwich Electric Supply Company, in succession to the late Mr. W. Boyd.

Councillor W. C. Turner has been elected chairman of Belfast Corporation Tramways Committee, and **Councillor Wm. Bennett** vice-chairman.

Mr. J. H. Estill, formerly commercial superintendent of the Port of London Authority, has re-entered the service of the Authority as commercial manager.

Mr. J. M. Calder, chief assistant engineer of Reading Corporation Tramways department, has been granted an increase in salary from £275 to £350 per annum.

Mr. H. T. Wakelam, county engineer of Middlesex, has been appointed a member of the Tramways (Board of Trade) Local Advisory Committee, Area No. 1.

Mr. James Makin, of Stoke-on-Trent, has been appointed chief assistant, Bexley electricity and tramways undertaking, at a commencing salary of £300 per annum.

Mr. H. P. Stokes, electrical engineer and tramways manager of the Bexley Council, has been granted an increase in salary of £200 per annum, as from January 1, 1918.

Mr. C. Clarke, general manager, Birkenhead Corporation Tramways, has been granted an increase of salary from £450 to £500, rising by annual increments of £50 to £650.

Sergeant C. E. Defer, R.F.A., has been awarded the D.C.M., and **Corporal S. A. Wraight, R.F.A.,** the Military Medal. Both were conductors on the London County Council Tramways.

Mr. David Williams has resumed his duties as traffic superintendent of the Bury Corporation Tramways. After a considerable period of service he has been discharged from the army owing to an accident.

Mr. J. D. Caird, traffic manager of Halifax Corporation Tramways, has been granted leave of absence, his medical adviser having advised that it was necessary for him to have a change of air for several months.

Sergeant-Major G. Thudon, who was formerly in the employ of the Croydon Corporation Tramways department, has been awarded the D.C.M. for bravery in carrying eleven wounded men out of action under heavy fire.

Mr. L. G. Byng, a director of the General Electric Company, Limited, and the son of the late Mr. G. Byng, chairman of that company, has been awarded the Military Cross for distinguished service on the Western Front.

Mr. D. L. Rutherford has been appointed locomotive, carriage, and wagon superintendent of the Furness Railway, in succession to Mr. W. F. Pettigrew, resigned. Mr. Rutherford has been engineer to the Furness Railway since 1900.

Mr. Ernest Hatton, general manager of the Newcastle Corporation Tramways, has been elected chairman of the Local Advisory Committee, No. 7 Area, of the Tramways (Board of Trade) Committee. **Mr. S. A. Carr** is the hon. secretary.

Mr. W. Claude Johnson has been appointed chairman of the directors of Messrs. Johnson and Phillips in succession to the late Mr. R. W. Blackwell. Mr. Johnson was one of the founders of the business of Messrs. Johnson and Phillips.

Mr. William Chamberlain, of Oldham Corporation electricity department, has been appointed general manager of the tramways, in succession to Mr. P. Priestly, who has accepted the position of deputy manager of the Liverpool Corporation Tramways.

Mr. J. M. McElroy, general manager of the Manchester Corporation tramways department, by a new arrangement recently approved by the Manchester City Council, has agreed to retain his position for a further period of five years, at a salary of £1,500 per annum.

Mr. R. Stewart Bain, managing director, and **Mr. G. W. Partridge,** engineer and manager of the London Electric Supply Corporation, have completed thirty years' service with the company. **Mr. H. C. Carter,** secretary of the company, has retired after twenty-nine years' service owing to ill-health.

Mr. William Clough, general manager of Bury Corporation Tramways, who has for some time been assisting the Shipyard Labour Department of the Admiralty, is to be transferred to the Tramways (Board of Trade) Committee. The latter has written to the Bury Tramways Committee making the request, and it was agreed to on the understanding that the proposed transference will enable Mr. Clough to devote more time to his duties at Bury than has been possible since he has been acting for the Shipyard Labour Department.

Mr. J. S. D. Moffet has declined the appointment of deputy manager of Liverpool Corporation Tramways. Belfast City Council, on the advice of the Tramways Committee, have unanimously expressed their desire that Mr. Moffet should remain, and have altered the terms of his remuneration so that it will shortly amount to £1,200 per annum. It is so seldom that Belfast Corporation are able to agree unanimously upon any subject, that their action in this case is a notable testimonial to the success which has attended Mr. Moffet's work in Belfast.

Mr. Percy Priestly, general manager and engineer of Oldham Corporation Tramways, who has been appointed deputy general manager of Liverpool Corporation Tramways, served his apprenticeship at the Scotia Engineering Works, Sunderland, and for five years subsequently was leading engineer. He was then appointed deputy manager of Halifax Corporation electricity works, and subsequently general manager and engineer of the Mexborough and Swinton Tramways Company, a position which he held for nine years. Two years ago he was appointed to the position at Oldham which he is now relinquishing. The salary attached to the position of deputy general manager at Liverpool is £800 per annum.

The many friends of **Lieut.-Col. Hurlbatt** will regret to learn that he was killed in action on March 25. For some years before the war Mr. Hurlbatt, as he then was, had charge of Messrs. Dick, Kerr and Co.'s interests in Manchester, and his charming personality

Lieut.-Col. Hurlbatt—Killed in Action.

gained for him a wide circle of friends and acquaintances. At the outbreak of the war he obtained a commission as 2nd Lieutenant in the Manchester Regiment, and by his meritorious service had reached the rank of Lieutenant-Colonel in the same regiment at the time of his death.

A Berlin telegram to the *Kolnische Volkszeitung* reports the death of Herr Arnold von Siemens, member of the Prussian Upper House and chairman of the board of directors of Siemens and Halske.

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TRAMWAY AND LIGHT RAILWAY NOTES.

BIRMINGHAM.

LATE CARS DISCONTINUED—CONDUCTRESS'S CLAIM AGAINST CORPORATION.

Commencing on Monday, April 22, the last cars leave the central termini at 11 p.m., instead of 11.30 p.m. At present there is no intention further to curtail the services. There was an interesting point at issue in a case heard recently at Birmingham County Court, when a conductress sued the Corporation for damages in respect of injuries sustained in alighting from one of its tramcars. It appeared that she had been acting as conductress on this particular car, but had already been relieved, and remained upon it with the intention of alighting at the point mearest to where she lived. In so doing she fell and sustained the injuries which formed the subject of the action, contending that it arose in the course of her employment. The judge, however, held that it did not so arise, and in deciding for the Corporation said that plaintiff's proper course was to have remained on the car until the stopping-place was reached, and in choosing to alight beforehand acted at her own risk.

BRADFORD.

SETTLEMENT OF DIFFICULTIES WITH EMPLOYEES.

Alderman Enoch Priestley, chairman of Bradford Corporation Tramways Committee, referring at a meeting of the Council to the recent strike, said that the committee were anxious to work in harmony with their employees; and any future causes of unrest or dissatisfaction on the part of the latter could be discussed between their representatives and those of the committee as they arose. There was no reason why differences could not be settled by the people concerned if they were left alone, but unfortunately the flames of industrial disputes were only too often fanned from the outside.

BRISTOL.

AN INDEFENSIBLE STRIKE.

A strike which caused much public inconvenience occurred at Bristol on Tuesday, April 23. In the morning cars did not run on the Bedminster and Ashton Gate route, and in the afternoon the service on other lines was partially suspended. It appears that the employees refused to take out their cars unless a non-unionist was discharged. The demand was not granted, and apparently no warning was given to the company either by the employees or their union officials that a strike was to take place. The company were able to keep a small number of cars running for the benefit of munition workers, many of whom have to travel long distances. The men resumed work on Friday, April 26.

CARDIFF.

SUPPRESSION OF UNNECESSARY TRAVELLING.

At a recent meeting of the Cardiff Corporation Tramway Committee, Mr. Arthur Ellis, the general manager, said that as the ordinary users of the cars would pay no attention to the appeals made by bills on the car windows not to travel unnecessarily in the hours when business people wanted to get home, there would be no alternative but to exclude them from the cars. The cars might have to be reserved for people giving proof that they were on work essential to the national interests. He referred particularly to the use of the cars by ladies who persisted in coming to town to do shopping and remaining until their busy hours. They had only a limited number of cars, and it was with the utmost difficulty that they could keep 80 cars running, although they could find use for 250 cars. He suggested that ladies should do their shopping between 10 and 12, and 3 and 4 o'clock. The manager was given authority to curtail the services if he thought necessary.

CARLISLE.

WOMEN DRIVERS.

The Watch Committee have decided to licence women as tramway car drivers. The company is making a great effort to improve the service.

COLNE.

REPAIRS TO TRAMWAYS.

At a recent meeting of the Tramways Committee the Town Clerk submitted correspondence with the Board of Trade upon the Corporation's application for permission to proceed with the repairs and renewals of the permanent way, crossings, and rolling stock of the department. The clerk was instructed to press for the Board's sanction to the proposed works being immediately proceeded with

EDINBURGH.

TRAMWAY PROVISIONAL ORDER.

Edinburgh Corporation has made application to the Secretary for Scotland for a provisional order authorising the Corporation to construct new tramways and to reconstruct existing tramways for working by electric or other mechanical power.

GLASGOW.

WAR SAVINGS SCHEME.

Mr. James Dalrymple, general manager of the Corporation tramways, has initiated a novel scheme for promoting the sale of war bonds. There is an attractive prize list, and for every £1 the buyer has a chance of winning a prize. Nearly three thousand investments of £1 each were made on a single day. A box was placed in Bath Street, and a large crowd was attracted by the band performance and cinematograph display given there. The scheme is not confined to Glasgow, and it is hoped to extend its operations throughout Scotland.

GOSPORT.

STRIKE ENDED.

After a strike lasting two and a half days on the question of a war bonus, the drivers and conductors and part of the fitting staff of the Gosport and Fareham Tramways Company resumed work unconditionally, the company having declined to accede to their demands.

HUDDERSFIELD.

KEEP TO THE LEFT.

The Corporation are attaching to the electric standards in the busiest centres of the town traffic regulation plates directing foot passengers to keep to the left. It will be recalled that the general adoption of this practice was vigorously supported at the meeting of the Municipal Tramways Association at Blackpool in September last. The object is to accustom pedestrians to face the traffic when stepping on to the roadway. There is no doubt that the change greatly increases the safety of the public.

ILFORD.

WEEK-END VOLUNTARY DRIVERS.

Men are being trained at Ilford as week-end car drivers, with the object of giving the hardworked regular motormen occasional holidays.

LEEDS.

NEW PARCELS SERVICE—EXTENSION OF QUEUE.

Nearly three years ago Leeds Corporation Tramways began to carry goods traffic, the goods being raw material for the Leeds Fireclay Company, whose works are on the south side of the city and their mines on the north. Recently this work was extended by the introduction of a new system of carrying parcels. The scheme provides for the running of special parcels cars twice a day—at 10 a.m. and 4 p.m.—on the Roundhay, Chapeltown, and Headingley routes, and it will doubtless be extended later. It has arisen out of the necessity of economising means of transport following the reduction in the number of horses and the supplies of petrol available for this purpose. The charges for parcels, by weight, and irrespective of distance, will be as follows:—Up to 7 lb., 2½d.; between 7 lb. and 14 lb., 3½d.; between 14 lb. and 28 lb., 4½d.; between 28 lb. and 56 lb., 6d. Parcels will be received at the central depot and despatched to various out-depots. Mr. James Hamilton, son of Mr. J. B. Hamilton, the general manager, has been appointed superintendent of the parcels department. Iron barriers have been erected in the centre of the street between Boar Lane and Commercial Street for the purpose of regulating passengers on the queue system. In this way dangerous rushes in boarding the cars are now avoided.

LEICESTER.

CONDITION OF THE PERMANENT WAY.

Mr. E. G. Mawbey, borough engineer, reporting to the Leicester Tramways Committee on the permanent way, says that it is in good running order, although on portions of the track where traffic is heaviest the rails show considerable wear after being in full use for over fourteen years, and it is evident that renewals will have to be made in the very near future. Rail grinding to remove corrugations has been carried out during about six months of the year. The total length ground amounted to 34,748 yards, the cost being £184 15s. 10d., an average of 1·305d. per yard. The track has been improved by the insertion of a number of anchors, both joint and intermediate.

LIVERPOOL.

HEAVY DAMAGES FOR TRAMWAY ACCIDENT.

At Liverpool Assizes on April 15 a jury awarded £500 damages against Blackpool Corporation to Gerard Ryder, a boy of eight years, who had been run over by a tramcar belonging to defendants. It was stated that the boy was standing on the tramway track on Blackpool Promenade watching a motor car which was emitting smoke and making a loud noise when a tramcar struck him. He was so injured that his left arm and one of his toes had to be amputated. For the defence it was contended that the boy in hurrying across the promenade ran into the tramcar and was knocked down before the driver had any chance of pulling up.

LONDON.

EARLIER HOURS—LICENCES FOR WOMEN CONDUCTORS.

The compulsory closing of entertainments in the Metropolis at 10.30 does not appear to have caused any inconvenience. The most notable effect of the new regulations has been the bringing forward of the evening rush on the tramways, tubes, and suburban railways. It has already been found possible somewhat to reduce the night services on the tubes and District Railway without causing inconvenience to travellers. The hours of the last trains have not been altered, but after 11 o'clock it is probable that some economy in

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train services can be effected. Mr. L. E. Harvey, general manager of Ilford Tramways, has reported to the Council that he has been notified by the Commissioner of Police that all inquiries as to women applicants for tramway car conductors' licences should be made by the police instead of by the tramway officials. It appears that in September, 1915, when women conductors were first employed, the Chief Commissioner of Police agreed with all managers of the metropolitan tramways that the latter should make all inquiries as to the character, age, etc., and that on the manager's certificate the police would issue a licence. Now for no stated reason this arrangement has been rescinded after nearly two and a half years, during which it has worked satisfactorily. Mr. Harvey has addressed a letter of protest to the Commissioner, pointing out that there was no reason for such an alteration, and that bearing in mind the considerable extra duties of the police at the present time, the proposed arrangement would greatly delay the issue of licences.

MANCHESTER.

Standing Passengers—Free Travelling for Wounded Soldiers.

The Manchester Watch Committee, at the request of the Tramways Committee, have relaxed the rule as to the number of passengers allowed to stand in the cars. Some criticism having been directed against the Manchester Tramways Committee for their refusal to carry wounded soldiers free on the cars, Mr. J. M. McElroy, the general manager, has explained to a Press representative that the military authorities were against giving unrestricted free riding to the wounded. The committee had granted tokens to all local hospitals, and these were distributed to the wounded men as the authorities thought fit.

NEWCASTLE.

Shortage of Staff.

Most of the motormen on the Corporation Tramways are between 41 and 51 years of age, and under the provisions of the Man-Power Bill the majority of these men will be withdrawn from the tramway services. Mr. Ernest Hatton, the general manager, recently stated to a Press representative that if these men were taken indiscriminately it would not be possible to continue the present service. Women were unable to face the gradients of the Newcastle system or the physical exertion required. It is regarded as probable that tramway drivers will be classified under the heading of transport, but there are no prospects at present to support this expectation. Steps were being taken to clear away uncertainty in the matter.

NOTTINGHAM.

Repairs After the War.

The chairman of the Tramways Committee has stated that if the war ended at once, at least £150,000 would have to be spent in relaying the permanent way. For two years practically no material for renewals or repairs had been procurable.

PORTSMOUTH.

Employment of Women Drivers.

The Portsmouth Tramways Committee have decided to employ women drivers. The general manager has selected half a dozen women conductors, who have passed the medical test as to general health and wrist power, and will be trained as drivers. It is anticipated that when these women have completed their training and shown their adaptability, a large number will be employed, as it is expected that the new demand on man power will reduce the number of male drivers.

TYNEMOUTH.

Railless Trolley as an Extension of Tramways.

A sub-committee appointed by the Tynemouth Town Council to consider the various suggestions for providing greater transport facilities has reported in favour of the railless trolley system as an extension of the tramways, and in place of the motor omnibus service to Preston, which has been withdrawn owing to the petrol shortage. The tramways in Tynemouth and the light railways linking up Tynemouth with Whitley, Monkseaton, and Cullercoats are owned and operated by the Tynemouth and District Electric Traction Company, and under the usual purchase clause the Town Council has the right to purchase the tramways and a short section of the light railway within the town area in 1920. It is in contemplation of this purchase that steps are being taken to provide for an extended service. The light railways outside the town area will not be purchaseable until 1922.

WIGAN.

Expansion of Tramway Department.

The Town Council has approved the recommendation of the Tramways Committee for the appointment of a traffic superintendent. Alderman Fletcher, chairman of the committee, in explaining the proposal, said that no department had made such enormous strides as the tramways during the past two or three years, and they considered the time opportune to strengthen the department and the staff. The traffic superintendent would be given a certain amount of responsibility, but he would be under the manager.

PATENT LIST.

Abstracted for "The Tramway and Railway World" from the Official Journal of Patents.

***** If the inventions have been communicated the names of the communicators are given in italics.**

Applications for Letters Patent.

Traffic signals (5,231)—J. L. Ames.
Fuel supply apparatus for motor vehicles (5,544)—W. B. Ankers.
Motor vehicles (5,516)—H. Burridge.
Device for replacing derailed tramway cars (5,211)—J. E. Catton.
Variable speed mechanism for motor vehicles (5,532)—E. Feuerheerd.
Speed controller for motor vehicles (5,437)—A. Gaillard.
Carriage jack for motor vehicles (5,253)—A. Good.
Rail joints (5,553)—J. A. Hyle and C. H. Nelson.
Differential gearing (5,273)—A. T. Nogrady.
Driving gear for motor vehicles (5,274)—A. T. Nogrady.
Motor, etc., jacks (5,346)—R. S. Osborne.
Lifting jacks (5,198)—F. Wiles.
Variable speed gear (5,355)—H. S. Wonham.
Lubricators (5,417)—L. A. Biggar and R. H. Biggar.
Protective devices for automobiles (5,826)—F. G. Brettell (*Nugo Device Corporation*).
Internal combustion engines of motor vehicles (5,934)—G. G. Chapman.
Brake (5,844)—A. F. W. Colecom.
Variable speed gearing (5,678)—C. J. Harvey.
Semi-automatic position indicator for tramway cars (5,747)—B. W. Reed and G. R. Roberts.
Rotary brakes (5,660)—R. C. Sayer.
Life-guards for fronts of motor omnibuses, etc. (5,856)—W. J. Wicks.
Variable speed gears (6,107)—S. A. Bagley and T. Bransom.
Electric car lighting, etc. (6,272)—A. Contet.
Variable speed gearing (6,210)—M. V. Ely and S. Saunders.
Electric signalling systems (6,146)—H. Green.
Automobile rear axles (6,195)—J. St. L. Maher.
Rail joints and fastenings for flanged rails (6,164)—E. S. Rayner.
Electric signalling apparatus (6,260)—N. Turner.
Point levers for railways (5,962)—L. W. Williams.
Non-slip devices for wheels of vehicles (6,556)—Alldays and Onions Pneumatic Engineering Co. and C. E. Sims.
Signal devices for motor vehicles (6,327)—Benjamin Electric, Limited.
Reversing gearing (6,738)—W. Brown.
Devices for controlling speed of automobiles (6,491)—A. Gaillard.
Steering gear (6,670)—H. J. Inder and W. H. West.
Railway traffic controlling apparatus (6,342)—McKenzie, Holland and Westinghouse Power Signal Company.
Apparatus for controlling and operating points of electric railways and tramways (6,419)—W. J. Mackintosh.
Speed indicators for motor cars, etc. (6,557)—W. T. Magrath.
Lifting jacks for vehicles (6,073, 6,786, and 7,088)—F. L. Rapson.
Transmission gearing (6,569)—C. F. Shanks.
Power transmission mechanism of locomotives, railway motor cars, etc. (6,880)—Baguley Cars, Limited, and E. E. Baguley.
Signal automatic vacuum train-stop (6,806)—R. Barlow.
Spring suspension for motor vehicles (6,820)—Lancia and Company.
Steering mechanisms for road vehicles (6,936)—F. W. Le Tall (*Northway Trailercar Company*).
Water-cooling systems for motor car engines, etc. (7,055)—A. C. F. Mackadam.
Railway signalling (6,899)—McKenzie, Holland and Westinghouse Power Signal Company.

Specifications Published.

1917.

Variable speed gearing (2,866—*105,900*)—C. R. Radcliffe.
Fluid pressure braking apparatus (2,870—*110,149*) and 2,871—*110,740*)—W. V. Turner.
Heating devices for motor vehicles (2,883—*113,652*)—G. A. Bartholomew.
Power transmission mechanism for motor vehicles (2,905—*113,653*)—T. H. Millington.
Brake systems (3,998—*113,691*)—R. Libani.
Lubrication of bearings (7,383—*106,824*)—A. G. M. Michell.
Tie-bars for rail chairs and method of locking in position (17,730—*113,773*)—H. Birkbeck (*L. Green*).
Governor for use on motor vehicles (3,529—*113,845*)—C. O. Marshall.
Overhead equipment of electric tramways (3,748—*113,850*)—J. Duggan.
Motor vehicles (6,628—*113,875*)—A. Good.
Trolley heads of electric tramway cars (9,496—*113,901*)—A. Harwood and F. H. Bennett.
Speed indicators for motor vehicles (12,225—*113,916*)—A. A. Benson and Benson, Flick and Solberg.
Transmission mechanism for motor vehicles (2,004—*113,991*)—F. B. Dehn (*Four Wheel Drive Auto Company*).

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Anti-skid attachments for the wheels of motor vehicles (2,471—*113,996*)—D. P. Davies.
Control devices for change-speed gear and reversing mechanism (3,522—*114,006*)—C. Talbot, Limited, and G. Roesch.
Self-propelled vehicles (4,548—*114,049*)—C. W. Gillett.
Safety track switches for tramways (5,586—*114,061*)—W. A. Dark.
Electric locomotives (8,854—*114,077*)—British Thomson-Houston Company (*General Electric Company*).
Device for facilitating the removal of motor road vehicles in the event of a break-down (10,171—*114,087*)—G. S. Owen.
Means for increasing the leverage on brakes automatically (10,209—*114,088*)—H. Mozley and G. S. Bertill.
Direction stoppage indicating devices for motor vehicles (10,315—*114,089*)—C. A. Singer.
Permanent way of railways (11,346—*114,102*)—J. Robbins.
Compensating driving mechanisms for motor vehicles (12,411—*114,106*)—J. D. Allen.
Variable speed transmission mechanism for motor vehicles (14,196—*114,112*)—B. A. Gramm.
Power transmission gears (16,851—*112,427*)—A. Leffler.
Variable gear power transmission apparatus (4,021—*114,187*)—E. Fairweather.
Means for securing rails to sleepers (4,378—*114,206*)—F. C. Shearer.
Turning or stopping signals for vehicles (5,672—*114,227*)—J. W. Patience.
Mechanically propelled vehicles (9,463—*114,248*)—E. Williams and J. Newall.
Railway points or switches (16,180—*114,278*)—A. J. Joest and P. Hansen.
Fluid pressure brakes (17,290—*114,283*)—W. V. Turner.
Electric signalling systems (3,419—*114,325*)—H. Green.
Electric generating and battery charging installations for railway and other vehicles (4,228—*114,332*)—J. Stone and Company and A. H. Darker.
Apparatus for lubricating the journals of railway axles (17,678—*114,404*)—A. Spencer.

Edinburgh Corporation Tramway Managership.—The Tramway Committee of Edinburgh have decided, in view of the taking over of the tramways by the Corporation, that it is desirable to appoint a manager, a sub-committee have now put forward a proposal that the salary to be attached to the office should be about £1,000 per annum.

Condition of German Railways.—Reuter's correspondent at Amsterdam has reported that in the course of a discussion on railway questions in the Reichstag the Progressive Deputy, Herr Mueller (Meiningen), remarked:—"Judging from the state of things on our railways and the condition of the rolling stock, we are approaching a sort of bankruptcy of communications." In response to a protest, the speaker subsequently endeavoured to make out that he used the words in an "international" sense, in view of the general disorganisation of traffic.

Colonial and Foreign Tramways Traffic Returns.

NAME OF COMPANY.	1917. WEEKS ENDED.				1918. WEEKS ENDED.				AGGREGATE.		
	April 7.	April 14.	April 21.	April 28.	April 6.	April 13.	April 20.	April 27.	Wks.	1918.	Increase or Decrease.
	£	£	£	£	£	£	£	£		£	£
Anglo-Argentine	47.910	56.123	53.625	49.844	... 57.588	58 041	59.417	57.721	... 17	937.674	+ 69.619
Calcutta ... ... Rs.	68.357	62.355	66.618	65.034	... 72.404	72.327	73.744	72.339	... 17	1.204.167	+ 72 121
Madras ... ... Rs.	35.335	(2 weeks)	38.708	(2 weeks)	... 48.284	(2 weeks)	40.805	(2 weeks)	... 15	277.813	- 34.666
Pernambuco	3.751	3.650	3 472	3.792	... 4.616	4.496	4.441	4.388	... 17	78 325	- 17.489

Companies issuing Monthly Statements.

	1916.		1917.				1917.		1918.				Wks.	AGGREGATE.	
	Nov.	Dec.	Jan.	Feb.	March.	April.	Nov.	Dec.	Jan.	Feb.	March.	April.		1917-18.	+ or -.
	£	£	£	£	£	£	£	£	£	£	£	£		£	£
Ballarat & Bendigo ..	3 090	3.981	3 521	3.196	...	...	3.179	4.127	3 771	3.902	...	...	48	40.644	+ 1.316
Brazilian Traction Mlrs	7160000	7312000	7266000	6872000	7549000	...	7695000	8039000	7837000	7315000	8094000	...	13	23246000	+1 559 000
Brisbane	26.740	32.910	33 020	29 800	33 340	...	32 900	35 019	34 500	32 009	35.530	...	13	102 039	+ 5 879
British Columbia ...	$ 472 767	496.959	493.315	451.679	456.626	...	525.629	555 555	559.569	501.150	510.892	...	39	4.495.271	+ 428 266
Buenos Ayres Lacroze	39 133	40.106	38.142	35 977	41.337	39.111	39.679	40.901	38 902	34.398	42.647	41.643	43	388 064	+ 2.601
Burma	26.824	32.551	23 802	22 912	27.132	...	27.761	26.224	25.429	22.985	27.905	...	34	212.142	+ 991
Cape Town	...	...	18.440	...	17.688	...	16.522	19.803	19.707	...	19.911	...	-	—	—
Carthagena & Herrerias	2.252	2.399	3.982	3.223	2.955	4.366	3.932	4 424	4.011	4 031	5 316	4 200	17	17.558	+ 3 032
Cordoba	12.836	12.327	12.432	11.896	...	...	13.339	13.406	12.845	12.972	...	...	47	147.938	+ 435
East India	1.942	2.120	1.835	1.570	1.647	1.445	871	1.099	1.176	1.318	1.729	1.791	39	12.287	- 5 398
Kalgoorlie	...	2.894	2.431	...	...	...	...	3.044	2.522	...	...	...	52	32 608	+ 1.176
La Plata	3.140	4.437	4.315	4 092	4 528	4 230	3 741	4 606	4.711	4.745	5 347	5.169	17	19.972	+ 2.807
Lima	33.608	37 171	36 841	34 228	37.585	...	37 466	41.697	43.536	41.913	42.106	...	13	127.555	- 18 900
Manaos ... ... Rs.	142 858	158.110	146.493	144.532	...	...	146.047	150 091	151.871	133.591	...	...	8	285.462	+ 5.563
Mexico ... ... $	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Monte Video	28 404	31 364	33 341	32 304	31 979	29 230	31 060	34 025	36.013	34 573	36.653	33 704	22	206.037	+ 19.415
Peruvian	$ 925.820	990.842	935.130	844.770	1017000	957.500	1034790	1101090	1189350	925.410	1119530	1079880	43	10.402 440	+1.142.548
Port Elizabeth	...	...	4.498	...	4 428	...	3.807	4.920	4 779	...	4.425	...	...	—	—
Rangoon	5.033	4 904	4.633	4.605	6.225	5.036	5 358	5.438	5.361	5.662	5 955	5 835	17	22.863	+ 2 363
Toronto	$ 911.829	...	1002469	932.567	991 192	...	1052000	...	1068319	981.933	1113472	...	13	3 163.724	+ 237.496
Winnipeg ...	$ 282.899	...	319.945	280.717	293.094	...	305 881	...	334.642	298.899	307.289	..	13	940.830	- 47.074

(*Continued on page 312*)

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TRAFFIC RETURNS—*continued.*

Tramways and Omnibus Undertakings in the United Kingdom.

NAME OF COMPANY OR CORPORATION.	1917. WEEKS ENDED.				1918. WEEKS ENDED.				AGGREGATE.		
	April 7.	April 14.	April 21.	April 28.	April 6.	April 13.	April 20.	April 27.	Wks.	1918.	Increase or Decrease.
	£	£	£	£	£	£	£	£		£	£
Aberdare U.D. Council	199	604	418	397	324	764	450	451	3	1.684	+ 266
Aberdeen Corporation	1.757	1.845	1.782	1 847	2.279	2 265	2.160	2 192	47	102 423	+ 14 216
Ayr Corporation	295	321	310	300	482	367	364	415	50	22 198	- 3 265
Belfast City	5.757	5.483	5.667	5.842	8.127	7 278	7 342	7.475	4	30.222	- 7 473
Birkenhead Corporation	1.501	1.560	1.607	1.622	2.003	1 894	1 876	2.073	4	7.847	+ 1.449
Birmingham Corporation	...	...	...	...	...	...	...	...	-	-	-
Blackburn Corporation	...	...	...	...	...	...	...	...	-	-	-
Bournemouth Corporation	2.376	2.018	2 184	2.180	2.813	2 539	2 681	2 727	4⅜	12 387	- 2 724
Bradford Corporation	6.205	7.731	6.451	6.875	8.158	7.665	6.705	7 527	4	30 055	- 2.398
Burnley Corporation	2.109	1.793	1.617	1 718	2.139	2 014	1.863	2.115	...	...	-
Burton-on-Trent Corporation	261	273	264	257	407	361	385	377	4	1 531	+ 451
Bury Corporation	1.848	1.448	1.411	1.451	1.783	1.626	1.544	1.879	4	6.841	+ 549
Chatham and District	1.138	1.230	1.217	1.215	1.341	1.168	1.137	1.170	17	19 097	+ 662
Chesterfield Corporation	...	...	...	...	...	...	...	...	-	-	-
Cork Electric	462	465	491	567	622	622	589	495	17	9.610	+ 1.955
Derby Corporation	1.072	1.078	1.018	1.054	1.458	1.278	1.284	1 439	4	5 460	+ 1 237
Dundee City	1.339	1.392	1.324	1 357	1.687	1.613	1.606	1.538	49½	77.233	+ 9.615
East Ham Corporation	1.130	1.338	1.265	1.321	1.364	1.290	1.173	1 307	3½	4.958	- 110
Exeter Corporation	...	...	...	...	...	...	...	...	-	-	-
Glasgow Corporation	24.133	24 424	25.286	25.661	28.475	28.122	28.263	28 659	47¾	1.263 119	+ 145.514
Glossop (Urban Elec. Supply Co.)	143	134	127	140	195	171	160	176	17	3 033	- 872
Halifax Corporation	...	...	1.918	2.070	...	...	2.204	2 227	3⅝	8.160	- 984
Halifax Corp. Motor Omnibuses	...	...	51	43	...	...	49	52	3½	184	+ 18
Hastings and District	...	...	...	...	...	...	...	...	-	-	-
Huddersfield Corporation	2.582	3.442	2.722	2.895	4.400	3 173	3.062	3 441	4	14 077	+ 1.435
Ilford U.D. Council	644	685	654	671	997	899	872	871	4	3 533	+ 1.020
Ipswich Corporation	414	457	422	453	765	614	597	658	4	2.547	- 892
Isle of Thanet	256	277	253	290	286	212	177	220	30	5.435	- 2.064
Kilmarnock Corporation	169	181	170	170	249	238	223	239	49½	10.439	+ 1.804
Lanarkshire	2 347	2.690	2.598	2.845	3.732	3.547	3 519	3.575	17	53.671	- 12.966
Lancashire United	1.742	3.011	1 868	2.018	3.794	2 537	2.865	2.615	17	42.978	- 12.745
Leeds City	9.081	10.850	9.814	10 120	12.824	10.713	10 736	11 411	4	44 533	+ 6.953
Leicester Corporation	3 237	3.529	3 265	3.284	4 765	4.101	4.211	4.234	...	-	-
Leyton U.D. Council	1 589	1.799	1.638	1.701	2.096	1.858	1 818	1.766	4	7.538	+ 811
Liverpool Corporation	13.888	14.345	14.732	14.971	17.785	16.737	16.657	17.415	16⅜	279.908	+ 43.804
Llandudno and Colwyn Bay	189	311	241	265	537	326	314	332	21	5 640	- 1.474
London County Council	47 384	49.111	49 020	50.936	57.079	55.105	55.352	54.235	3½	191 893	+ 22.529
Maidstone Corporation.	333	226	180	196	499	262	231	237	3½	1.109	+ 237
Manchester Corporation	18 622	18.903	18 713	19 502	24.664	23.311	22.850	24.520	4	93 014	+ 21.064
Newcastle-on-Tyne Corporation	6.800	5.214	7.039	7.321	8.762	7.727	8.447	8.831	4	33.803	+ 7 498
New St. Helens and District	977	1.564	1.027	1.139	1.842	1.350	1.384	1.385	43	59 866	+ 13.937
Northampton Corporation	545	795	695	698	779	868	881	873	4	3 401	- 668
Nottingham Corporation	4.071	4.103	3.766	3.894	5.933	4 948	5 156	5 311	4	18 739	+ 4.698
Oldham Corporation	2.840	2.602	2.491	2.583	3.207	2.973	2 819	3 315	5	15 523	+ 2.539
Portsmouth Corporation	...	...	...	...	...	...	...	...	-	-	-
Reading Corporation	...	869	860	900	752	1.161	1 151	1.170	4	4 234	-
Rhondda Tramways	1.351	1.824	1.427	1.404	2.461	1.706	1.560	1 634	17	25 908	- 4 787
Rochdale Corporation	...	...	...	...	...	...	...	...	-	-	-
Rotherham Corporation	1.805	1.738	1.632	1 686	2 124	1 954	1 988	2.094	4⅜	9 307	- 1.685
Sheffield Corporation	10.977	11.468	11 103	11.355	13.883	12.717	12.688	13.637	4⅝	63 733	+ 9 757
Southampton Corporation	1.610	1.788	1.666	1.721	2.613	2.364	2.274	2 344	3⅝	8 239	- 2 212
Southend-on-Sea Corporation	631	898	679	709	1.026	691	676	677	4	2 529	- 85
South Shields Corporation	870	868	812	...	1.179	1.031	1.010	...	3	3 109	- 731
Sunderland Corporation	1 598	1.618	1.592	1.610	2.180	1 982	2.038	2 069	4	8.269	- 770
Sunderland District	643	609	814	672	1.175	1.071	904	883	25	21 269	- 5.674
Swindon Corporation	211	251	216	237	349	298	266	279	3⅜	1 083	- 281
Torquay Tramways	450	631	530	625	963	799	704	827	17	11 705	- 3 811
Tyneside Tramways and Tramroads	599	779	642	...	1.116	909	871	...	16	13 313	3 632
Wallasey Corporation	1.196	1 346	1.274	1.315	1 675	1 511	1.482	1 615	3⅝	6 282	+ 1.151
Walsall Corporation	831	1.042	812	835	1 451	1 070	1.096	1 114	4	4 570	- 1 050
Walthamstow U.D. Council	978	1 118	1 036	1.115	1.410	1.223	1.162	1.217	4	4 830	+ 822
Warrington Corporation	480	514	475	...	785	714	719	...	3	1 853	- 618
West Ham Corporation	3.231	3 418	3.251	3.388	4.185	3 798	3.845	3.781	3½	13 879	- 1 635
Wigan Corporation	1.784	2 081	1 705	1.753	2.571	2.170	2.782	2.312	4	8 623	+ 2.206
Wolverhampton Corporation	...	...	...	...	...	...	...	...	-	-	-
Yorkshire (West Riding)	1.938	2.301	1 866	1.976	3 168	2.278	2.158	2 704	17	40 745	+ 9.395

TRAFFIC RETURNS SUSPENDED.

The following Corporations and companies have suspended the issue of their Tramway Traffic Returns during the war:—Accrington, Bath, Birmingham, Blackburn, Blackpool, Blackpool and Fleetwood, Bolton, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin and Lucan, Dublin United, Glasgow Subway Company, Hastings, Hull, Leith, London General Omnibus Company, London United Tramways Company, Lowestoft, Metropolitan Electric Tramways, Limited, National Steam Car Company, Nelson, Newport (Mon.), Portsmouth, Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Company, Wolverhampton Corporation.

Owing to the European war, the Government have taken over the railways of Great Britain as from August 4, 1914, and the issue of traffic returns has been suspended. Consequently the traffic returns of the London electric railways cannot be given.

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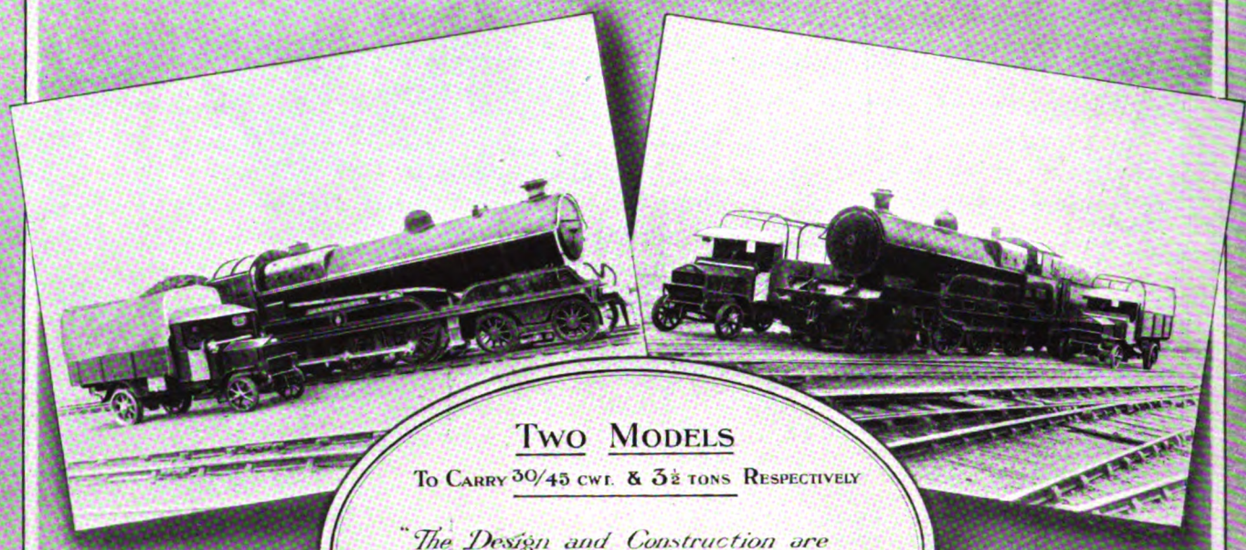

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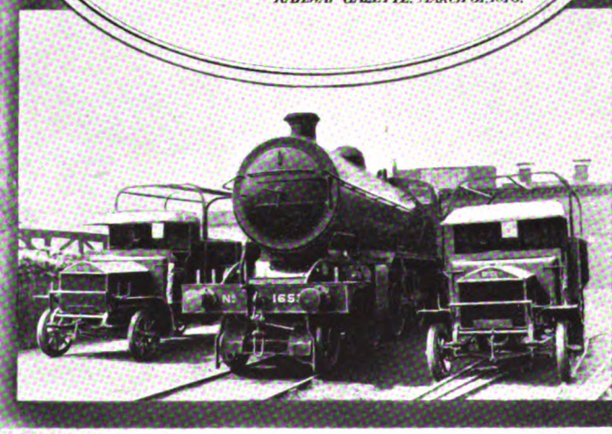

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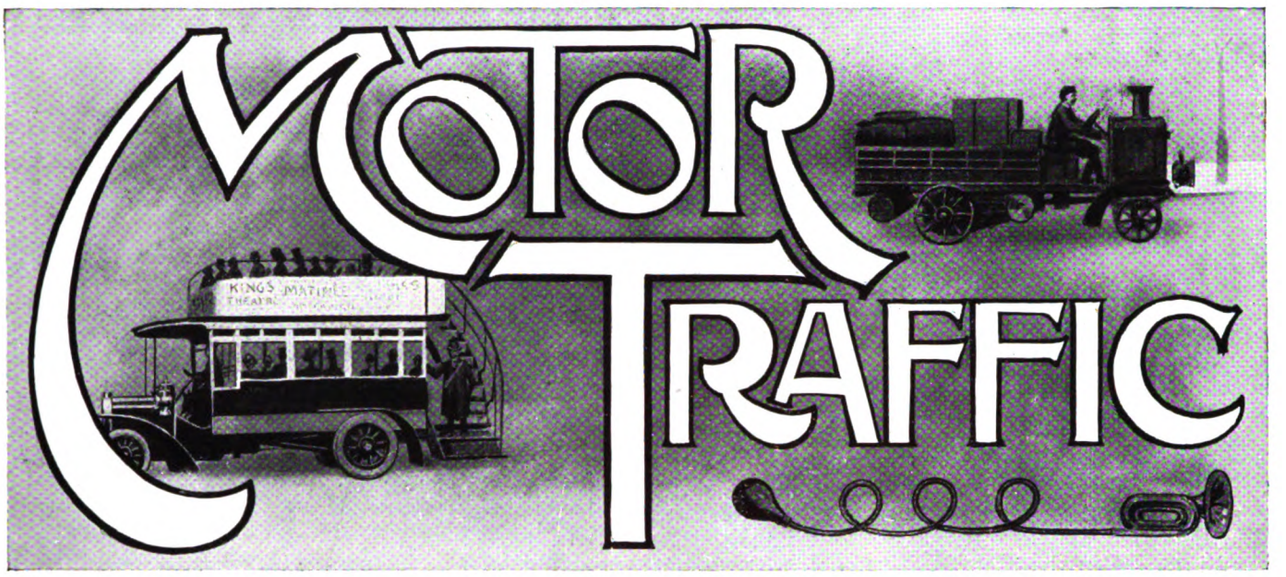

Despite the fact that no one can yet foretell the date of the conclusion of the war, more and more time must be given to the consideration of the problems of reconstruction, which grow continually more complex as our national resources are drawn more and more into the vortex. The Road Transport Control Board, embodying the organisations formed by it, should be regarded just as much from the point of view of reconstruction as from the point of view of its immediate utility. Certainly its first duty is to co-ordinate the road transport work of various Government departments, and to provide for the economic use of vehicles generally, ensuring that they are applied to essential purposes. To this end vehicles are being registered and a scheme of priority classification prepared, so that the available machines shall be utilised for the most important classes of work. One feels, however, that the greatest benefit is likely to be felt when the war is over, and will take the form of an improved general organisation of vehicle services with the elimination of a good deal of unnecessary competition and duplication of mileage. Thus, if in the present emergency the work of a certain locality is parcelled out among local carriers, it is hardly probable that these will ever again indulge in the old wasteful competition. On the other hand, they are more likely to enter into agreements which will define the sphere of each, and to couple these with a sort of goods exchange system. The organisation supporting the Transport Board is to be very widespread. First, there is the Central Advisory Committee, then thirteen divisional Boards, each with its Advisory Committee, and then again about one hundred Area Committees. If this great framework achieves anything at all, it would seem to be very wasteful policy to permit it to drop out of existence the moment the war is over. Moreover, the Minister of Reconstruction has given us hints of a policy favouring the establishment of rural motor services which may perhaps absorb some of the returned military vehicles. Again, there are possibilities of considerable numbers of these same vehicles being used in connection with road reconstruction, and some local authorities will be necessary to insure that the Government use of vehicles does not encroach too much on the legitimate business of traders, and is efficiently organised within its own sphere.

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Quite a different phase of reconstruction which also affects transport is that which has to do with the establishment of what are officially called "new industries." That is to say, developments aiming at the production within this country of goods hitherto imported either wholly or mainly. There will, no doubt, be many such developments connected with the motor industry; consequently the Ministry of Reconstruction has founded the organisation known as the Engineering Trades (New Industries) Committee. This is assisted by a number of branch committees, representative of various sections of engineering, and one of these branch committees has been formed in the interests of the motor industry. The chairman of this particular branch, who by virtue of his position has also a seat upon the main committee, is Mr. H. C. B. Underdown, chairman and managing director of Commercial Cars, Limited. Mr. Underdown is also a director of a well-known firm of private car manufacturers, and is chairman of a section of the Association of British Motor and Allied Manufacturers, Limited. In the first instance he has formed his Branch Committee by calling in the assistance of Messrs. E. Powell (Humber), J. W. Stocks (Components), B. Caillard (Wolseley and B.L.I.C.), and Horace Wyatt, who will also act as secretary of the committee, which will probably be somewhat enlarged at an early date. It is likely also that sub-committees will be formed, representative of the various sections of the motor industry. The utility of the whole movement seems to depend largely on whether the terms of reference are adhered to very rigidly. If the activities of this committee are extended to govern the work of providing facilities for getting out post-war models of vehicles and improved types of engine, and obtaining priority for the necessary materials, then its influence may be very great. If, on the other hand, it is permitted to do no more than encourage the manufacture of accessories hitherto imported, its effect will be negligible. It looks to us as if this was a case in which the dividing line is so indistinct that the committee will be compelled to go further afield until it will cover practically every development of the motor industry, and will serve as a means of getting proper priority for motor manufacturers as regards raw materials.

It is interesting to notice the importance which is attached by the Minister of Reconstruction to the careful consideration of the interests of the buyer in the formation of the policy of the manufacturer. Doctor Addison particularly accentuated this point when

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addressing the members of the British Engineers' Association. Motor owners not infrequently express the view that the people who are supposed to be looking after their interests are in fact more concerned with the interests of the trade. There may be cases in which the accusation is justifiable, but in general it is based on a lack of realisation of the main principle that the interests of the industry are in essentials identical with those of the user. We have laid stress on this point more than once recently. The motor industry cannot flourish so long as the motor user is dissatisfied and oppressed. Neither can it develop unless the user is given roads upon which to run his vehicles. The consequence is that, when we find the manufacturer "butting in" and endeavouring to stimulate the users' interests in the users' own welfare, we need not suppose that this is merely due to a love of interference, but may safely conclude that what the manufacturer wants is to strengthen his own position by improving that of the users and potential users of his vehicles. If there is at present lack of co-operation where it ought to exist, the fault lies with the motor user rather than with the manufacturer. The former is too suspicious of the motives of the latter. If these motives were concealed we could understand his suspicions, but they are as clear as day; and it is absurd for motor users to refuse the collaboration or help to those who can give it merely because it is suggested by self-interest.

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These comments are prompted partly by the "Protest" recently issued by the Motor Trade Association. In this protest one of the most important points is a proper insistence upon the benefits accruing to the public as a result of the extensive use of motor transport. It is obvious enough that the public service motor vehicle and the motor lorry which carries the raw materials of manufacture and distributes goods and produce, are essentially beneficial to the community. It is less obvious to the comparatively poor man that the motor car owned by the comparatively wealthy man may be an asset not only to its owner but also to other classes. Presumably everybody is agreed that there is no reason why even the most rabid socialist should throw bricks at a doctor because he owns a motor car. In this case it is evident that his use of the vehicle may result in the saving of life, and must increase his working efficiency. It is less obvious, but just as true, that this same increase in efficiency results from the use of nine out of any ten cars that are seen upon the road at any normal time. A certain portion of a busy man's time is spent upon work in respect of which time cannot be saved without the work being skimped. Quite a considerable proportion is spent in moving from one place to another. The motor car saves a good percentage of this time which is otherwise not productively utilised. It serves the individual in much the same way as improved organisations for loading and unloading may serve the lorry owner, that is to say, it enables valuable machinery to spend a bigger proportion of its life in active work and less in standing or running idle. Our great problem is to increase the value of the individual to the community. If we can do this, higher payment of the individual becomes possible, and consequently every man who strives to increase his own value to the community by eliminating wasted time, deserves thanks rather than obloquy.

ARMY LORRIES AND FOOD DISTRIBUTION.

Although the Road Transport Board was appointed in January last, no practical result of its work can yet be seen. Indeed, judging by the leisured manner in which the machinery for carrying out the functions of the Board is being set up, it will be many months before the serious problem of a more equal food distribution is likely to receive the attention which is so urgently needed. On April 9—over two months after the appointment of the Board—an advisory committee was formed, but the local transport boards, with advisory committees for each of the 13 provincial areas, have, however, at the time of writing, yet to be constituted. It can be readily understood that a comprehensive scheme which is designed to reorganise the whole of the road transport of the country needs careful consideration, both in the selection of the *personnel* and also in the method of procedure, and therefore slow progress is to be expected. The point, however, which is not so easy to understand is that in spite of the urgency of the food distribution question, nothing in the nature of special treatment could be arranged to relieve the situation, but it must form part of the general transport scheme which, as we have indicated, must necessarily take a long time to bring into working order. Can it be that the responsible members of the Government do not realise the serious nature of the situation and its effect upon the health and spirit of the public? Or are they indifferent to the unnecessary hardship which is being inflicted as a consequence of the lack of transport for food distribution? Time after time in the daily Press instances have been given of the waste of food, and, what is even of more importance, the waste of effort and the disheartening of food producers as a consequence of the lack of transport. On the one hand, appeals have been made by the Food Production Department urging the necessity of the production of all kinds of foodstuffs wherever possible. When, however, the department are applied to for assistance in marketing the food they have appealed for, they disclaim any responsibility for food transportation, "as another department has that matter in hand." The other department is, of course, the Board of Trade, which has appointed the Road Transport Board, from which no assistance can be hoped for until the whole of the road transport of the country has been reviewed, classified, and organised to the satisfaction of the representatives of no less than six different departments of the State—truly a hopeless position for the food producer, who has been led to invest his time and money at the call of the Food Production Department, and requires assistance now.

With the congested state of the railways owing to the vast quantities of war material in transit, delays are to be expected, but even here, under State control, something better should be possible than at present exists. Writing in reply to a request for an explanation of certain charges which were out of all proportion to the cash received for a consignment of food sent to a London market, the salesman stated that "The railways will not deliver vegetables at any price, and owing to the want of vehicles, he was unable to get them collected at anything like the normal rates. The railways would not carry empties, and in the present

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state of the trade he could only advise the grower 'not to send his produce to London at all.'" Here, then, is the position after nearly four years of war, after the appointment of a host of salaried officials to obtain an increase of home-grown food in order to defeat the submarine menace: the best efforts of the food producer are nullified because the railways cannot handle the goods, and road transport facilities are not available. But are these the real facts? We are of the opinion that they are not. If the transport of food had received the attention it deserves, and the waste mileage of Government-owned motor vehicles been applied to useful loads, we are confident that very different results would have been obtained. It is common knowledge that large numbers of army lorries—we understand that over 1,000 are stationed at a single depot near London—are in daily use for the training of drivers, the majority of which could be utilised under proper supervision in a manner that would have been of the greatest national advantage, and would go a long way toward solving the food distribution problem as it affects the civil population.

WAR MOTOR EXPERIENCES IN FRANCE.

Pooling of American Services Effects a Saving of 15 to 25 per Cent.

Major Barrett Andrews, assistant chief director of the United States Army transport service in France, recently returned to Washington in order to give army officers the benefit of the lessons learned by the Expeditionary Force in the working of mechanical transport. He has stated that an increasing number of trucks will be required, with greater standardisation by makers of small parts combined with more simplicity and less elaborate design. All the motor service of the American army has been pooled excepting the aviation trucks, and is now under the direction of Brig.-Gen. H. F. Rogers, Chief Quartermaster Corps, who operates directly under General Pershing.

General Rogers has organised the service with the idea of completely eliminating waste, duplication of effort, red tape, and loss of time, and with the result that there is a saving of 15 to 25 per cent. in the number of vehicles required. For example, under the pooling system, if the trucks of the Engineer Corps are idle, they are used by the artillery for hauling ammunition, or if the trucks of the artillery are idle they are used by the Quartermaster Corps for carrying supplies. Under the old system, whereby each corps controlled its own trucks, the vehicles could not be used by the various other divisions without considerable red tape, and frequently not at all.

Distribution of Vehicles and Allocation of Spare Parts.

The scope of General Rogers's work embraces procurement, maintenance, technical supervision, and all repairs, except as applied to aviation trucks. Cars are distributed in districts according to their makes to insure as far as possible standardisation of parts for each district, thus avoiding the waste that would be created by haphazard distribution of different makes of trucks. The plan of maintenance includes a large supply depot in central France, where a huge stock of parts is kept. It is so situated as to have excellent railroad facilities. There is a large repair shop close by which forms the main repair shop, with a capacity for 1,200 trucks per month. Four types of repair shops are operated. There is assembly at the base repair shops, a factory to do work requiring two to three weeks' work at a point named Central Park, semi-mobile repair shops operating 15 to 30 miles from the front lines on the jobs requiring several days of work, and the field repair shops working close to the front lines and making adjustable repairs.

Salvage and exchange are the principles kept in view in the distribution of spare parts. The salvage includes the return of all metal and other materials to the central depot, where there is a salvage department, and the exchange system includes the return wherever possible of damaged and ruined parts, such as magnetos, before the new parts are issued. This scheme, however, is not allowed to interfere with the highest efficiency which demands in emergencies the quickest action. Catalogues have been compiled, one showing the parts peculiar to each make of truck, and the other combining the parts common to all trucks. There are approximately 1,800 important common parts. The factory numbers of the special parts are retained in the catalogue, thus facilitating the ordering of parts. All parts are ordered by drivers through the commanding officer of the division by requisition. It is noteworthy that General Pershing and General Rogers have eliminated the written requisition at the front, thus doing away with the time lost by the red tape and allowing for prompt work in an emergency.

Advantages of Standardisation.

Major Andrews states that standardisation is important at every turn. The requirements for the military trucks include power, good traction effort, four-speed gears, great strength of all transmitting members, security by use of double ignition, extra lights with minimum of exposure, bumpers front and rear, means of towing, and in general all qualities that stand for strength and durability. The advantages of standardisation when repairs have to be made, whether in the depots or on the road, are incalculable. The reduction in tonnage required to carry over sets of spare parts for standardised trucks instead of for many different kinds is of the greatest importance.

Contrasting the repair work of the French army and the American army, Major Andrews states that the difference is the difference between hand and machine work. The French make the majority of their repairs by hand, while the Americans are installing complete mechanical equipment to provide adequately for machinery repair.

Standardisation of Tires.—A Trailer Drawback.

Stress is placed by Major Andrews on the fact that American motor vehicle makers will ensure greater efficiency if they turn out their trucks with as many nuts and bolts and other minor parts standardised as is possible. Tires are causing considerable trouble because of the great variation in sizes. Major Andrews requests that the makers should combine to standardise in so far as possible without necessarily affecting design. Simplicity and strength are the two real requisites. There are none of the many facilities for caring for trucks abroad that exist in the colder climate of the United States. During the cold months the radiators had to be drained daily because there was no anti-freeze solution available, and at night no heated garages in which to store the trucks. Gasoline is used conservatively for cleaning purposes because of its scarcity.

Two-wheeled trailers are giving the best results, but all types of trailers are handicapped, according to Major Andrews, because of inadequate design. He states that the most urgent need is for a self-lubricating towing device, and that there would be great demand for trailers so equipped.

The majority of the trucks are provided with permanent tops, and special wind-shields. Large goggles are served out to the drivers owing to the dust, which has been found extremely thick all through the fighting territory. There are two men, both expert drivers, attached to each truck. Forty per cent. of the passenger cars used in the army have closed tops, owing to the heavy dust and the frequent rains.

Troops are marched on foot only to an extent necessary to keep them fit, and wherever possible are moved from point to point by motor truck. Cooking for troops and truck companies being moved overland is now accomplished in kitchens arranged on trucks.

Three and Five Ton Trucks Preferred.

Supplies and ammunition are carried by motor trucks to within 1,200 yards of the front line trenches. The preference in motor trucks by the Expeditionary Forces, as expressed by Major Andrews, is for 3-ton and 5-ton trucks with the regular war bodies. The reasons are that the regular body is more adaptable, and under the pooling scheme is really necessary, as the trucks are constantly used for diversified work. General Rogers believes it better to have many supplies moving along slowly but steadily rather than the limited supplies that could be hauled by the speedier and smaller trucks.

The highways are divided for use so that the trucks take the outside while the passenger cars take the centre. The space is limited, thus further making the less speedy and larger trucks more desirable. Near the front line the trucks are driven without lights, the drivers relying upon the glow of their cigarettes for guidance and warning signals.

As is only to be expected from an American officer, Major Andrews states that not only the American army but all the Allied Forces have found that U.S.A. motor vehicles are the best. It would be easy to claim the distinction for British-made vehicles.

Motor Vehicles After the War.—Dr. Addison, Minister of Reconstruction, has expressed the hope that vehicles now used for war purposes might after the war be of service in solving the transport problem, and the Prime Minister recently stated that thousands of motor lorries would be in the hands of the Government for use for this purpose.

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MOTOR TRANSPORT ON WESTERN AND ITALIAN FRONTS.

THOUSAND MILE RUNS FROM FRANCE TO ITALY.

Motor vehicles have played a vitally important part in the double work of bringing up reinforcements to the British, French, American, and Portuguese forces during the present German offensive on the Western Front, and in evacuating field and advanced hospitals and stores while the enemy were overrunning the Somme area. Great execution, too, was effected upon the Germans by some British motor car and motor cycle units whose services were available at a number of widely separated points when the pressure became severe. With main line and light railways being constantly damaged by shell fire, motor transport became doubly imperative for the transference of troops to threatened points besides for the routine work of bringing up ammunition and food. The work accomplished under the first category seems to have been on a par with what was effected during the defence of Verdun by the French in 1916, and with the dash of the hastily-collected army which set forth from Paris in 1914 and defeated the Germans at the Marne. All the details seemed to have been planned beforehand, with the result that the motor transport service worked with great smoothness, despite the surprise of the overrunning of the Somme battlefield.

Great interest also attaches to the great work achieved by the French and British motor transport departments on the occasion of the Germano-Austrian invasion of Italy in November of last year. Particulars have only recently come to hand of the very effective manner in which motor vehicles supplemented the inadequate railways over the Alps, in conveying many thousands of troops to the southern battlefield. This feat undoubtedly constitutes the record among the many services that motor traction has rendered to the Allies. A number of the several convoys traversed a distance exceeding one thousand miles, the roads passing over the Alps for many miles, frequently at heights varying from 8,000 to 10,000 feet. Several thousand vehicles were engaged in the task, which occupied several weeks, the stream of vehicles being unending.

There was hardly a make of vehicle unrepresented in the great trek, but the Italian Fiat was purposely used to the greatest extent owing to the ease with which these cars could be repaired if necessary at the company's works.

On one of the Italian Alpine passes two thousand soldiers were constantly employed in widening dangerous turns, repairing damage done, and clearing away snow. Extra sign boards were erected with special instructions in English and French, informing the drivers what gear must be engaged to go down a particularly dangerous hill, and the distances to be kept on winding passes.

Skilled organisation was apparent in the clock-like working of the several convoys. Freight-carrying lorries were divided into groups of 18 or 20, all in each group being of the same make. Every vehicle carried sufficient fuel for 250 miles' running, while further supplies were arranged for at various points. Each group had attached to it its own mechanicians, with hand tools sufficient for carrying out general repairs. A stock of spare parts was provided for each group. At intervals of approximately ten groups, a motor repair shop was provided for handling more extensive repair work than could be undertaken by the group mechanicians. That an average daily run of 90 miles was made on short winter days is the best testimony to the effectiveness of the organisation. The authorities declare that the convoys were as regular and as reliable in their arrivals as the general train service, and that they had a lower percentage of accidents and delays.

A Napier, Converted to a Rail Motor, Conveying Troops in East Africa.

PETROL LICENCES ISSUED.

The following table from the *Board of Trade Journal* shows the number of licences which have been granted to each class of user of motor spirit up to the end of March, 1918 :—

	1st Issue.	2nd Issue.	3rd Issue.	4th Issue.	5th Issue.
Private cars ...	94,111	84,610	70,452	57,720	—
Private cycles ...	95,098	48,580	34,462	29,103	2,000
Doctors' cars ...	14,636	11,966	10,698	10,701	—
Hackney vehicles ...	22,189	19,061	16,351	14,958	—
Commercial vehicles	35,577	32,290	38,880	33,396	—
Industrial processes	44,303	41,375	60,104	54,427	—
Total	305,914	237,882	230,947	200,305	2,000

In reply to a question by Sir J. Fleming in the House of Commons the President of the Board of Trade stated that the general situation regarding the supply of motor spirit had not altered, and he regretted that the necessity for continued economy precluded the possibility of any relaxation affecting the use of petrol for conveying persons to church.

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STRAKER-SQUIRE STREET CLEANING MACHINES.

Sanitation during war time, and the appliances in connection therewith, are almost as important as the supply of the actual munitions of war. Pressing as its requirements in the latter direction undoubtedly are, the Priority Department evidently is fully alive to the urgency of the situation at home, and continues to release new machines for sanitary service. The illustrations depict some of the latest machines, which have been specially designed for street washing and gulley cleansing, and may be taken as examples of the ever-growing popularity of the commercial motor vehicle in public service. Quite apart from the saving effected as compared with the old horse and man labour, the national call upon the man power of the country has rendered it extremely difficult to "carry on" under the old system. With commendable foresight the progressive Southwark Borough Council have acquired a fleet of street cleansing machines which enables their officials efficiently to carry out this all-important work where otherwise the calling up of their staff would have made it practically impossible. Some idea of the advantages of the modern methods of street cleansing will be gathered from the fact that the mileage of each of the washing machines shown in one of the illustrations works out to 40 on channel washing and gulley flushing work per day, one filling of water—1,100 gallons—being sufficient for about four miles of channeling work. In practice it has been found that one of these washing machines will cover in one hour with 2,000 gallons of water work that would take a horse washer three and three-quarter hours to complete, with the use of 4,500 gallons of water. The gulley fleet shown in the illustration has been in regular service for some time past, and regularly deals with about 150 tons of matter per week, representing the contents of about 600 gulleys. Under present conditions it costs about 30s. per day to run one of these machines, a figure which would be materially reduced in normal times, but still shows a saving of over 20 per cent.

Gulley Plant at Marylebone—Rear View.

The gulley plant which Messrs. Straker-Squire have recently delivered to the St. Marylebone Borough Council, and of which two illustrations are given, is similar in the main to that supplied to the Southwark Borough Council. One or two minor alterations have been made, however, the most noticeable being the tilt given to the tank and also the larger sludge door, the object being to facilitate the emptying of the tank.

Each of these machines is mounted on a 5-ton Straker-Squire standard chassis. Between the engine and gear-box in the case

Gulley Plant at Marylebone Showing Rake of Tank.

of the washing machine a supplementary gear has been fitted from which, by means of a silent chain, a drive is taken to the twin-stage centrifugal pump, which delivers the water taken from the tank to the nozzles in front of the chassis at a pressure varying from 40 lb. to 60 lb. per square inch. It is worthy of note that the whole of the equipment of these machines—chassis, tanks, etc.—are of London manufacture, the former being constructed at the Straker-Squire works at Twickenham.

A Group of Straker-Squire Street Cleaning Machines at Southwark.

IPSWICH ELECTRIC WAGONS.

In our February issue was published a tabular statement of returns obtained by the Weymouth Corporation in order to enable them to decide the question of purchasing a battery-driven wagon for the Streets and Works Committee. We have since been informed that the reference to Ipswich contains an error in stating that the 3-ton vehicle in use there is a Ransomes' "Orwell" type. It was, in fact, supplied by the General Vehicle Company. The remark attributed to the Ipswich borough surveyor to the effect that he "believes where a journey of less than 2½ to 3 miles had to be made advantage lies with horse haulage" should have referred to complete journeys out and home again. Thus in terms of radius in which horse haulage had the advantage the figures should read 1¼ to 1½ miles, beyond which electrical haulage is to be preferred. Mr. F. Ayton, chief engineer and manager of Ipswich Corporation Electric Supply and Tramways Department, states that the Corporation are fully satisfied with the results obtained from the vehicle in question.

Motor Omnibus Service at Llandudno.—A service of motor omnibuses has now been established at Llandudno to take the place of the Sunday train service on the Llandudno branch of the London and North Western Railway which has been withdrawn. The route covered is via Craig-y-don, Llanrhos, and Deganwy, and the omnibuses will meet all main line trains at the junction.

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REPORT OF THE GAS TRACTION COMMITTEE.

On April 29 was issued the appended interim report by the Inter-Departmental Committee appointed in November, 1917, by Mr. Walter Long, M.P., chairman of the Petroleum Executive, to consider and report upon :—

(1) The employment of gas in substitution for petrol and petroleum products as a source of power, especially in motor vehicles, and the manner in which such gas may be supplied, stored, carried, and used, with due regard to the safety of the public.

(2) The action, if any, which should be taken by His Majesty's Government to encourage and safeguard the use of gas for this purpose.

We have held 15 meetings and examined orally 22 witnesses who attended before us on behalf of the undermentioned incorporated and other bodies :—

British Automobile Traction Company, Limited ; Society of British Gas Industries (Meter Section) ; Rotary Meter Company (1905), Limited ; Royal Automobile Club ; Motor Gas Equipment Association ; Society of Motor Manufacturers and Traders and the Technical Committee of the Motor Industry ; Agents' Section, Limited, and the Motor Trade Association ; Institution of Gas Engineers ; Commercial Motor Users' Association ; British Commercial Gas Association ; Institution of Municipal and County Engineers ; County Councils Association ; County Surveyors' Society ; London and Provincial Omnibus Owners' Association ; Manufacturers of Semi-rigid Containers ; and the London General Omnibus Company, Limited. The Fire Offices Committee and the Accident Offices Association were invited to submit the results of their experience of insuring risks connected with gas traction, and to make recommendations. As only two accidents of minor importance had been reported, these representative insurance organisations, whilst placing the results of their inquiries at the disposal of the committee, did not see any occasion to submit oral evidence.

The committee has had the advantage of the assistance of the Minister of National Service and the Controller of Priority to the Ministry of Munitions of War, both of whom nominated representatives to sit with the committee upon those occasions when points of respective concern arose. The Controller of Priority also nominated a witness, who afforded valuable guidance in regard to the permissible limits of development under war conditions in the use of compressed gas. Evidence concerning the coal shortage was given by the Controller of Coal Mines.

(2) It appeared to us desirable to conduct our inquiry in two stages, the first relating to war conditions and the second to such altered circumstances as may be expected subsequently.

(3) After full and careful consideration and discussion of the evidence, we accordingly have the honour to submit in this interim report our unanimous conclusions and recommendations concerning :—

(*a*) The propulsion of motor vehicles by the employment of gas carried in flexible containers at or slightly above atmospheric pressure ;

(*b*) Approved limits to immediate experimental uses on a commercial scale of gas under compression for traction purposes ;

(*c*) Authority to enable the committee to proceed with necessary experimental investigations.

(4) We shall, in continuing the work which you have entrusted to us, devote our attention to the conditions which should govern the extended use of gas under compression as a source of power when the necessary appliances and plant are obtainable.

Conclusions and Recommendations.

(*a*) Supply and Employment of Gas in Flexible Containers.

(5) *Safety and Simplicity.*—We are satisfied that ordinary town gas can be effectively, safely, and promptly substituted for motor spirit, as a fuel for use in internal-combustion engines of the types commonly fitted to motor vehicles, without reduction of the compression-space in the cylinders of such engines.

(6) *Economy.*—It is reasonable, from a commercial point of view, to adopt a mean consumption of 250 cubic feet of ordinary town gas (with, say, a gross calorific value of 490-500 British thermal units per cubic foot) as the equivalent of one gallon of motor spirit, and on this consumption-ratio gas at 4s. per 1,000 cubic feet shows the same fuel cost as motor spirit at 1s. per gallon, apart from interest on cost of installation and maintenance of flexible containers and filling arrangements.

(7) *Gas Bags.*—Flexible containers should be made of fabric which complies with the specification in the Appendix accompanying this report. The working life of such a container may be considered to be normally about eight months, and this may probably be increased by as much as 50 per cent. when the material is continuously protected from the action of light and otherwise by a suitable covering. Leakage of gas due to the porosity of inferior fabrics may after one month of use equal the actual gas consumption.

(8) *Supply.*—It is desirable that owners of gas undertakings should be suppliers of gas for traction purposes, and should also allow re-sale through the intermediary of motor depots and like establishments. There should be no restrictions, except in so far as shortage of coal or other war conditions may render imposition of control or priority necessary, upon the drawing of supplies of gas for traction purposes through suitable meters at consumers' premises or private filling-stations.

The erection of a stand-pipe, pillar-pipe, or any filling installation on other than private property should be subject to approval of the site by the local authority concerned, and, if agreement is not reached within 14 days of delivery of written notice and application, the owners of the gas undertaking or other applicant should have a right of appeal to the Local Government Board to appoint an inspector to decide between the parties.

The deviation of any gas-propelled motor omnibus from a route which was established prior to March 1, 1916, for the purpose of obtaining occasional or regular supplies of gas, or of avoiding any bridge or other obstruction, should not be treated as a breach of Section 20 of the Local Government (Emergency Provisions) Act, 1916.

(9) *Measurement.*—Reduction of demands upon both rationed material and labour will be facilitated by the elimination, wherever possible, from new installations of the older methods of measurement. The installation of new meters in the construction of which tin plate is required can, we believe, in many instances be obviated by substituting a rotary, inferential, or other measuring instrument, the manufacture of which will require little or no rationed material. It is desirable that the Board of Trade should empower local authorities to test and stamp such instruments for this purpose, provided that they are accurate within 2½ per cent. plus or minus while capable of passing gas, and that sellers and consumers of gas should concur in their use.

Objection should not be raised to the sale of gas for traction purposes, on agreement between seller and consumer, by acceptance of mean volume per filling in respect of individual flexible containers. With a view thereto the capacity, as ascertained at a pressure of 30 inches of a column of mercury and a temperature of 60 deg. Fahrenheit within the container, or as adjusted by calculation to comply with those conditions, should be certified and stamped on the container fabric, or on an attached identification label or disc.

(10) *Control of Filling.*—Where the pressure in the supply-pipe to the container may at any time exceed two inches of water above the pressure of the atmosphere, it is advisable that, instead of relying solely upon hand control, the physical movement of the container should, at a point lying between nine-tenths and full inflation, so actuate an automatic cut-off valve on the gas-inlet pipe as to stop the flow of gas into the container before the point of full inflation can be reached.

(11) *Standard Connection.*—The gas inlet to the container on any vehicle in general use should be of iron gas-pipe, of 2½-in. bore, screwed externally with the British standard pipe-thread to take a union for that size of pipe, and such union should be fitted permanently to the end of the flexible tube or other connecting pipe through which the gas is passed from the source of supply.

(12) *Price of Gas.*—The price of gas for traction purposes should not exceed the ruling price per 1,000 cubic feet in any area of supply, subject to the district rates of discount (if any) according to quantity, if the supply is taken at the consumer's premises or private filling station or any agreed system of measurement.

There should be a charge of not more than 2d. per 100 cubic feet over and above the ruling domestic rate for the area, in respect of any supplies for traction purposes which are drawn at any filling station or depot other than at the consumer's premises or private filling station in order to cover labour and service, with a minimum of 6d. per filling.

(13) *Depot Storage under Pressure.*—The consideration of this branch of the subject has been deferred for the later stage of inquiry.

(14) *Attachment.*—Flexible containers should be constructed with a valance extending the whole length of their compass along a horizontal line at not more than half the height of the container when fully inflated. The finished valance should be of at least double the tensile strength of the fabric in the body of the container, and, in the absence of means of continuous attachment to the vehicle's structure or roof, should be eyeletted to receive metal rings at intervals of not more than 2 feet, and thereby securely held to the roof of the motor vehicle or to rails or a framework thereon.

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MOTOR TRAFFIC.

Any composite container, i.e., one which has a lower box-portion made of boards or scantlings lined with fabric or otherwise rendered gas-tight, should, as regards the collapsible portion, comply with the specification given in the Appendix, and the gas-capacity of the collapsible portion should be approximately the same as that of the rigid portion.

A flexible container should be mounted on and attached to any motor vehicle in such a manner that on partial or total deflation during use the collapsing portion shall at all times fall within the base of a retaining tray, a box-sided structure, or covered scantlings, of a minimum height of 18 inches, and due provision should be made to prevent "chafing" of the fabric.

The over-all height of any container and the vehicle carrying it should at no time exceed 17 feet from the ground.

No container should at any time extend beyond the greatest over-all width of the motor vehicle to which it is attached.

When a flexible container is carried on a trailer, the fabric of the container should be protected by a separate covering of canvas or other material stretched over hoops or other sufficient supports of wood or metal, or by a light enclosing structure of wooden laths or the equivalent.

There should be a positive cut-off valve and an automatic non-return valve between the flexible container and the point of gas delivery to the carburetter intake or the induction pipe of the engine.

(15) *Use.*—There should be top ventilation to the outside atmosphere in any building which is used, either permanently or temporarily, for the purpose of housing or otherwise accommodating any vehicle which is equipped with a flexible container with gas inside it.

Any flexible container should be completely deflated if the vehicle to which it is attached has stood idle for more than two weeks.

It is recommended that, in the event of a priority of gas-supply being established, any differentiation in respect of the quantities of gas sold for traction purposes should be on the basis of the priority which attaches to the purposes for which the transport in question is required.

It is recommended, having regard to the satisfactory insurance testimony, that gas-equipped motor vehicles be admitted to dock premises and wharves without the imposition of any special restrictions.

(*b*) Approved Uses Under Compression during the War Period.

(16) *Semi-Rigid Containers.*—It is undesirable that semi-rigid containers of rubber and canvas or other proofed fabric should at present be allowed to be charged with gas to a pressure greater than 90 lb. on the square inch, or should be of a larger internal diameter than 4 inches, and even with these limitations containers of this class are, in the opinion of the committee, unsafe if not properly armoured with galvanised steel wire of 0·012 in. diameter (No. 30 B.W.G.).

Encouragement should be given to the construction and use of semi-rigid containers of rubber and woven wire, up to working pressures of 300 lb. on the square inch, and it is recommended to the Controller of Priority that he afford such assistance as may be necessary to permit developments of this description of container.

(17) *Metal Cylinders.*—It is desirable to encourage forthwith, under special licence from the Board of Trade where necessary, a limited number of experiments on a commercial scale with compressed gas in rigid metal cylinders, plain or wire-bound, at pressures up to at least 1,800 lb. (120 atmospheres) on the square inch, in connection more particularly with certain of the larger motor omnibus undertakings and the transport departments of certain of the more important municipal authorities, in order to obtain data for dealing with this post-war development.

(*c*) Technical Investigations.

(18) It is expedient to proceed with experiments and tests in connection with the determination of factors affecting portable gas-generating plants, and the commercial use of gas for traction purposes in containers at high pressures, together with questions relative to liquefaction, absorption, and enrichment, as well as in regard to improvements in the existing arrangements for effecting the admixture of gas and air in the requisite proportions under varying conditions. Authority is, accordingly, now asked to combine with the second stage of evidence by witnesses independent investigations by an expert sub-committee. It is recommended that, where necessary, any such experiments and tests should be conducted under a special licence, granted by the Board of Trade, in respect of any gas consumption involved.

The report is signed by Sir Boverton Redwood (Petroleum Executive), chairman; Major A. Cooper-Key (Home Office); Messrs. E. D. Jones (Board of Trade), H. H. Law (Local Government Board), A. Churchman (Ministry of Munitions of War), W. D. Gibb (Ministry of Munitions of War), C. Carpenter (Ministry of Reconstruction), E. S. Shrapnell-Smith (Petroleum Executive), W. Worby Beaumont (Metropolitan Police), and J. Ollis (London County Council); Lieut.-Col. R. K. Bagnall-Wild, R.E. (Institution of Automobile Engineers); Messrs. F. W. Goodenough (British Commercial Gas Association), Wm. Kay (Manchester Corporation), and G. W. Watson (Commercial Motor Users' Association).

APPENDIX.

Specification for Town Gas Container Fabric.

(1) Textile Components.—The textile components are to be:—

(*a*) Outer Texture.—A cotton Wigan, preferably dyed khaki.
Weight: 4½-5 ozs. per sq. yard. Ends per inch: 60.
Width: 42 inches. Picks per inch: 60.

(*b*) Inner Texture.—A grey cotton Wigan.
Weight: 4½-5 ozs. per sq. yard. Ends per inch: 60.
Width: 42 in. Picks per inch: 60.

(2) Construction.

(*a*) Fabric.—The fabric is to be two-ply diagonally-doubled with the biased ply on the inside. Equal quantities of right-handed and left-handed biased fabrics are to be prepared by the manufacturer.

(*b*) Proofing.—The proofing is to contain not less than 90 per cent. of first grade native or plantation rubber uniformly and evenly spread between the doubled fabric.

(*c*) Weight of Proofing.—To be 6 ozs. per sq. yard between the plies.

(*d*) Method of Proofing.—The dried fabric must be given a priming coat thoroughly to impregnate the texture, followed by not less than six coats to build the proofing to the required weight.

(*e*) Vulcanisation.—To be by the "hot" process, employing steam heat. Dry heat and the "cold" process are prohibited.

(3) Tests on Fabric.

(*a*) Strength.—The strength of the finished fabric shall be not less than
Warp, 60 lb. per inch. Weft, 60 lb. per inch.
The tests will be made on a "constant rate of loading" machine. The rate of loading to be 150 lb. per minute per inch width, and the size of the specimens to be two inches wide and seven inches between the jaws of the machine.

(*b*) Permeability.—The permeability of the fabric to hydrogen must not be more than 10 litres per square metre per 24 hours when tested on the N.P.L. type of apparatus at a constant temperature of 15·5 degrees Centigrade and an excess hydrogen pressure equal to one inch of water.

N.B.—Ten litres per square metre per 24 hours is approximately 0·3 cubic ft. per sq. yard per 24 hours.

MOTOR VEHICLES FOR MUNICIPALITIES.

Derby Town Council has decided to purchase a Ford motor ambulance at a cost of £187.

Rothwell Urban District Council propose to purchase a motor wagon at a cost of £878.

Uxbridge Urban District Council has under consideration a proposal to purchase a motor fire engine.

Bradford Corporation has decided to purchase a 5-ton motor lorry for use in the electricity department.

Knaresborough Rural District Council has under consideration the suggested purchase of motor vehicles.

Surrey County Council has under consideration a proposal to purchase a motor lorry at an estimated cost of £970.

Fulham Borough Council has decided to purchase a steam wagon at an estimated cost of £1,050 for use in the highways department.

Deptford Borough Council has agreed to the proposal of the Works Committee to purchase a motor van fitted for refuse collection.

Aldershot Urban District Council has received the sanction of the Local Government Board for the purchase of a motor fire engine.

Kesteven County Council has received the sanction of the Local Government Board to purchase a motor tipping wagon at an estimated cost of £993.

Bingley Urban District Council has obtained sanction from the Local Government Board to the purchase of two steam wagons for use in their gas department.

York County Council has decided to purchase a steam wagon The City Engineer has been instructed to make inquiries as to those available for immediate delivery.

Glasgow Corporation has under consideration a recommendation from the Electricity Committee to purchase a 5-ton electric tipping wagon at an estimated cost of £1,450.

Bury St. Edmunds Borough Council has given instructions to its surveyor to report upon the suggested substitution of steam-driven vehicles for horse haulage.

Dundee Corporation has under consideration a recommendation from the Street Cleansing Committee for the purchase of electric battery vehicles for use in that department.

Holywell Rural District Council has instructed its surveyor to obtain particulars of the cost of purchase and maintenance of steam wagons and to bring up a report thereon.

Eastbourne Town Council has decided to utilise a number of old motor omnibus chassis, which are no longer suitable for their original purpose, for refuse collection, street watering, etc. Suitable bodies will be fitted.

Ilford Urban District Council has decided to purchase two electric battery tipping wagons from the General Vehicle Company. Each will be fitted with 44-cell Ironclad-exide batteries, supplied by the Chloride Electric Storage Company.

Leyton Urban District Council, who desired to purchase two electric battery vehicles for use in house refuse collection, has failed to obtain priority certificates from the Ministry of Munitions. In view of the urgency of the matter a further application is to be made.

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MOTOR TRAFFIC.

MOTOR TRAFFIC NOTES.

A New Zealand Omnibus Venture.—The Baker Motor Omnibus Company has been formed at Lower Hutt, New Zealand.

Paris Motor Cabs.—The supply of petrol to the motor cabs of Paris has been reduced from 2 gallons 1 pint to 1¾ gallons per day.

Cost of Gas for Motor Vehicles.—At Manchester the Corporation Gas Committee has increased the charge for the filling of containers from 4d. to 6d. per 100 cubic feet when supplied from public stations.

British Motors in France.—The French motor manufacturers have put forward a proposal to the effect that all the foreign built motor vehicles that have been purchased by the French Government during the war should be retained for use in State service after the war.

Hull and East Riding Transport Company, Limited, has been formed to carry on the businesses of general carriers, omnibus and cab proprietors, manufacturers of and dealers in lorries, motor cars, and vehicles, etc. The registered office is 1, Church Court, Old Jewry, E.C.2

State Control of Petroleum in Italy.—The whole of the petroleum industry of Italy has now been placed under State control, including the importation, distribution, and consumption. After filling the Government requirements, the available stocks are to be reserved for lighting purposes and agricultural machinery.

Omnibus Amalgamation in East Kent.—The East Kent Road Car Company now comprises the omnibus businesses in East Kent of Thomas Tilling, Limited, the British Automobile Traction Company, Limited, Margate, Canterbury, and District Motor Services, Limited, Wacher and Company, Limited, Ramsgate Motor Coaches (Griggs), Limited, and the omnibus business of Mr. J. Jackson, of Westgate-on-Sea.

Tires for Manchester Corporation Motors.—The Tramways Committee of Manchester Corporation has accepted the tender of the Shrewsbury and Challiner Tyre Company for supplying and fixing solid rubber tires on motor omnibuses, and tire covers and inner tubes; and that of the Dunlop Rubber Company for supplying and fixing solid rubber tires on motor wagons and outer covers and inner tubes for motor cars.

Electric Road Vehicles in Railway Service.—Of the large number of battery-propelled vehicles used by the Midland Railway Company nearly half have the Chloride Electrical Storage Company's Ironclad-Exide accumulators, which were supplied by the General Vehicle Company, Limited, Imperial House, Kingsway, W.C.2. The Chloride Company has supplied or has on order Ironclad-Exide commercial vehicle batteries for the Great Northern Railway, Lancashire and Yorkshire Railway, London and North Western Railway, Great Western Railway Company, and others.

Gas Producer Plants for Motor Vehicles.—The great difficulty of maintaining a regular service of motor vehicles on town gas, consequent upon the necessity for recharging the containers at comparatively short intervals, has again brought forward the question of the practicability of using coke-fired producer gas plants, mounted upon the chassis, and thus providing the necessary fuel for the propulsion of the vehicle. In the past, attempts in this direction have failed from various causes, but in view of the greater need for alternative systems, and the fact that large quantities of coke are available, every encouragement should be given to manufacturers of gas producer plants in an endeavour to adapt their system to road vehicles.

A ROAD TRANSPORT SCHEME.

In an article published in a recent issue of the *Leicester Mail*, Mr. Walter E. Sturgess, a staff officer of the Leicestershire Motor Volunteer Corps, outlines a road transport scheme which is worthy of consideration. The main feature of the scheme as suggested by Mr. Sturgess is the appointment by the Road Control Board of selected garage proprietors in large cities and towns who have suitable accommodation for receiving goods to be transported or called for. Each of these proprietors would be held responsible for the superintendence of the whole of the work under the scheme in the defined areas which would be allotted to them. Full details of the amount of floor space available, size of staff, and suitability of works to effect immediate repairs in case of the breakdown of vehicles controlled by the Board would be tabulated at the time of appointment. Each garage proprietor appointed under the scheme would be required to enter into an agreement to keep a stated portion of his premises always at the disposal of the Board, and also to give precedence in his workshops for the repair of vehicles enrolled by the scheme. Each of these depots would be the centre to which manufacturers and traders in the districts would send their goods for dispatch, as vehicles from other towns would call at these depots for the purpose of setting down and picking up as required.

With regard to charges, Mr. Sturgess suggests that the Road Control Board should meet a deputation of the C.M.U.A. and other motor transport associations with a view to fixing a flat rate for the whole of the country.

An important point which should receive special consideration is the advantage of this scheme to the Food Control Committees, as it would enable them to get the food of the country more equitably distributed in thickly populated districts, and so dispose of much of the discontent which is so rife at the present time. The use of idle army lorries, which is discussed in another column, is also suggested both in the regular scheme and in cases of emergency.

Napier Business Vehicles with 30-35 cwt. Chassis Ready for Shipment to the Front.

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THE

Tramway & Railway World

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Including sixty-four issues, of which twelve are large illustrated numbers, printed on fine art paper

NOTICES.

All Communications an Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

UXBRIDGE URBAN DISTRICT COUNCIL.

The Council are prepared to receive Tenders for a Turbine Motor Fire Engine, with suction adaptor, telescopic ladder and hose complete.

Further particulars can be obtained from the Council's Surveyor, Mr. W. L. Eves, 54, High Street, Uxbridge.

No Tender will necessarily be accepted.

Tenders, endorsed "Motor Fire Engine," and stating when delivery can be given, to be sent to the undersigned, not later than 12 o'clock noon on Tuesday, May 28th, 1918.

W. T. HARVEY,
Clerk to the Council.

Council Offices,
63, High Street, Uxbridge.
May 17th, 1918.

COUNTY BOROUGH OF SUNDERLAND.

Water Tube Boilers.

The Corporation are prepared to receive Tenders for the supply and erection at their Electricity Works of two Water Tube Boilers, with Integral Superheaters, Mechanical Stokers, Vertical Cast-iron Tube Economisers, Steel-plate Chimneys, etc., etc.

Specification and form of tender may be had on application to the General Manager, Mr. Alfred S. Blackman, Electricity Offices, Dunning Street, Sunderland, upon payment of a deposit of £1, which will be returned only after a bona-fide tender has been opened.

Tenders, endorsed "Electricity Works Boilers," and addressed to the undersigned at the Town Hall, Sunderland, to be delivered not later than the first post on Wednesday, May 29.

The Corporation do not bind themselves to accept the lowest or any tender.

H. CRAVEN,
Town Clerk.

Town Hall, Sunderland.
May 6, 1918.

ISLINGTON BOROUGH COUNCIL.

The Lighting Committee of the Islington Borough Council invite Tenders for the supply and erection of Machinery and Plant, viz.:

(a) 5,000-KW. Steam Turbine, Alternator, Exciter, Condensing Plant, Switchgear, Piping, etc.
(b) Water-tube Boilers, Coal Conveyor, Telpher, Burners, Steam Piping, and other Accessories.

Specification, General Conditions, and Form of Tender may be otabined on application to the Electrical Engineer, 50, Eden Grove, Holloway, N.7, on or after April 29th, 1918. A deposit of £2 2s. will be required, which will be returned on receipt of a *bona-fide* Tender.

Tenders, under seal, and endorsed on the outside "Tender for Electric Lighting Plant," to be addressed to the undersigned, and delivered at the Town Hall, Upper Street, Islington, N.1, not later than noon, Friday, May 24th, 1918.

(By order) C. G. E. FLETCHER,
Town Clerk.

Town Hall, Upper Street, N.1.
April 12th, 1918.

POSITIONS VACANT.

EDINBURGH CORPORATION TRAMWAYS.

Appointment of Tramway Manager.

The Corporation of Edinburgh invite applications for the appointment of Tramway Manager for the Corporation Tramways. These Tramways are at present leased to and worked by a Company, but the Corporation will assume their management and working on the expiry of the lease in June, 1919. The Tramway Manager will be expected to make the necessary preparations for the transfer of the management of the present system to the Corporation and its future development. Thereafter he will, subject to the control of the Corporation, be responsible for the management and superintendence of the Tramway system generally.

The Manager will be expected to enter upon his duties at as early a date as possible after his appointment. The salary proposed is £1,000 per annum. A memorandum for the information of candidates for the appointment will be supplied on application to the subscriber. Canvassing of members of the Council is not permitted.

Applications with 20 copies of testimonials must be lodged with the subscriber not later than Saturday, 1st proximo.

THOMAS HUNTER,
W.S., Town Clerk.

City Chambers,
Edinburgh, May 10, 1918.

NORTHERN COMMAND ESTABLISHMENT FOR ENGINEER SERVICES.

Wanted.

Assistant District Electrical Engineer. Must be a fully qualified electrical engineer, with sound technical and practical training, with experience in alternating and direct current operation for both lighting and power installations. Applicants should be competent estimators and draughtsmen, and a knowledge of internal combustion engines is desirable.

Salary £4 to £4 10s. per week, according to experience.

Mechanist, having an intimate knowledge of the installation, repair, and maintenance of internal combustion engines, hoists and workshop machinery; must be a capable draughtsman and have some knowledge of estimating and electrical work.

Salary 65s. to 70s. per week.

Foreman Electrician, capable of supervising construction, repair and maintenance of electric lighting and power installations, making detailed inspections of electrical installations and preparing schemes for small installations.

Salary 65s. to 70s. per week.

Wiremen, with practical experience in the construction and maintenance of electrical installations.

Salary 50s. to 55s. per week of 56 hours.

Applications, in writing (from ineligible or low category men), for the above appointments should be made as early as possible, giving full details of experience, and, accompanied by copies (not originals) of testimonials, should be addressed to the DISTRICT ELECTRICAL AND MECHANICAL ENGINEER, Northern Command, 54, Swinburne Road, Darlington.

COUNTY BOROUGH OF BARNSLEY.

Electricity Department.

Junior Shift Engineer.

Wanted, Junior Shift Engineer, experienced in E.H.T., A.C, and L.T., D.C., 3-wire supply, with rotary converters.

State age, training, and experience, also date when able to commence duties.

Salary £156 per annum, plus 12½ per cent

Applications, accompanied by not more than three testimonials, to be addressed to T. W. Hibbert, Acting Borough Electrical Engineer, Electricity Works, Barnsley, endorsed "Shift Engineer."

W. P. DONALD,
Town Clerk.

May 10th, 1918.

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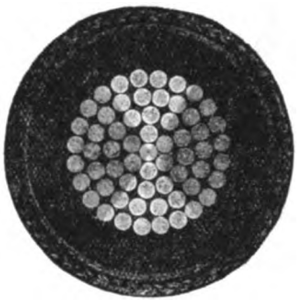
1837.  1918.

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THE
Tramway AND Railway World

Established in 1892 and Published by

THE TRAMWAY & RAILWAY WORLD PUBLISHING CO., Ltd
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SATURDAY, MAY 18, 1918.

STAGGERED HOURS AND SKIP STOPS.

The Tramways (Board of Trade) Committee have left managers to devise their own measures for securing the reduction in coal demanded by the Board of Trade. The hope may be expressed, however, that in the staggering of hours of employment, and the institution of skip stops, the Committee will not rest satisfied with suggesting their adoption. Both proposals concern the maintenance of car services, and the efficiency of war industries and of ordinary trade. Nearly a month has elapsed since the Committee suggested that works should vary their hours of opening and closing, and they have since announced that the Home Office would do all that is possible to facilitate this necessary change, and would, if desired, arrange for a representative to attend any local conference of manufacturers. This offer has been given little publicity beyond that accorded by the *Board of Trade Journal*, and it is not surprising therefore that no announcements have yet been made of firms deciding to adopt the suggestion. It would not be impossible to make the scheme mandatory. but before that is done the Home Office might consider the desirability of enlisting the aid which publicity experts have so effectively rendered in the advertising of war loans and bonds. There is little need to dilate here upon the advantages that would accrue from staggered hours. The scheme has to some extent been in operation for a year or more in Glasgow, Newcastle, and one or two other places. Relief has been afforded by owners of adjacent works arranging with each other for an interval of about half an hour between their respective hours of starting and stopping. In the case of very large works, a variation as between departments would be found to be advantageous. By the adoption of this plan a considerable reduction in fuel consumption could be effected, and there would be a public gain in the form of convenience and saving of time to the workers. In the United States, widespread attention is being given to staggering. Washington is the first to give a clear right of way to the Army and Navy departments. Next in importance are the 80,000 persons employed in Government offices, while private firms are regarded as of third importance. An incidental advantage of staggering would be a more uniform distribution of the load on the power plants, which would permit more economical use of coal. The line voltage would be maintained more readily, which should ensure an even operating speed throughout all periods of the day. In Washington, also, the skip stop system is being adopted, thus ensuring faster schedules and an improved service with the same number of cars. In the whole of the States, Fuel Administrations have ordered the reduction of stopping places by one-third by which means a saving of 1,500,000 tons of coal a year is anticipated. A forty per cent. reduction, in Washington, in the number of stops, is estimated to effect a saving of one-eighth in coal. The Cincinnati Traction Company have reduced their stops by more than 38 per cent. It is hoped thereby to save 21,000 tons of coal per annum. A reduction in the number of stops has often been advocated in these columns as a desirable measure in ordinary times ; in the present conditions it is imperative. The public will accept the change without complaint when its necessity has been impressed upon them, and it is satisfactory to observe that managers in several towns are being helped to do this by the local newspapers.

INCREASED TRAMWAY FARES.

Mr. G. H. Hume, chairman of the Highways Committee, announced at the London County Council meeting on Tuesday that the revised scale of tramway fares would come into force on the south side of the River Thames on May 18. On other sections the date on which the increased fares will take effect will be arranged in connection with the tramway companies with whom the Council has rnnning powers. As regards ordinary fares, the distance carried for the different values will in many cases be reduced. The average length of the 1d. fare stage will be just under two miles, with two stages for 2d., three stages for 3d., and any distance on one car 4d. Transfers other than those for workmen will be suspended. Workmen's single tickets for 2d., and return ticket for 3d., will cover any distance on one car. Transfer tickets on workmen's cars will be given as before.

Liverpool Tramways Committee propose to make an increase in fares, but before anything is decided the matter will be discussed by the City Council at their next meeting early in June. There was a wide diversity of opinion among the members of the Tramways Committee, and the resolution recommending an increase in fares was carried by a narrow majority.

Nelson Tramways Committee have decided,subject to the approval of the Town Council, to abolish halfpenny tramway fares. The electricity department, which is worked in conjunction with the tramway undertaking, propose to increase the charges for energy by a halfpenny per unit for lighting, and a farthing per unit for power.

The first instalment of increased fares on the Leeds tramway system came into force on Monday last, the two halfpenny stages nearest the centre of the city on all routes having been withdrawn. The other increased fares adopted by the Council are expected to come into operation by June 1.

Bradford City Council has approved the proposal of the Bradford Tramways Commitee to increase tramway fares by 50 per cent. from June 1.

SELECT COMMITTEE ON TRAMWAY FARES.

Mr. R. J. Howley, vice-chairman of the Tramways and Light Railways Association, in giving evidence before the Select Committee of the House of Commons on Statutory Tramway Fares, said that while some tramway undertakings were in a position to increase fares substantially, others were so limited by statutory restrictions that no increase could be made. Some relief was consequently called for. The Association was of opinion that those who had found the capital to provide public services should not be forced into financial difficulties with no means of redress. It should be borne in mind also that many thinly populated districts would to-day be without tramway facilities if these had not been provided by private enterprise.

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L.C.C. TRAMWAY MATTERS.

Assistance from the Tramways (Board of Trade) Committee.

At the meeting of the London County Council on Tuesday, a report was submitted by the Highways Committee on the dealings of the Tramways (Board of Trade) Committee with London.

The report states that this Committee was appointed as a result of the attention of the Board being called by the Ministry of Munitions to the fact that some of the tramway systems of the country essential for the production of munitions of war, owing to the difficulty in obtaining material and labour for repairs, had reached a condition in which a serious breakdown was to be expected unless steps to provide a remedy were taken forthwith. The terms of reference to the Committee, communicated in a circular letter dated January 29, 1918, were as follow :—

"To be a Committee to consider the needs in respect of rolling-stock, materials and plant of tramways and light railways which are essential to the prosecution of the war, and, subject to the approval of the Board of Trade, to take such steps as may be necessary or desirable to supply these needs by means of transferring rolling-stock, materials or plant from less essential tramways or light railways, or otherwise, as may be practicable.

"Representatives of the Board of Trade and the Ministry of Munitions will attend the meetings of the Committee in an advisory capacity when necessary."

From an explanatory memorandum issued by the Board of Trade, further defining the duties of the Committee, it appeared that the functions of the Committee had been extended beyond the original terms of reference; the Committee being authorised, *inter alia*, "to deal with questions of new or increased services and the maintenance of existing services," and "to consider such applications for the revision of existing statutory tolls and charges on tramways and light railways as may be referred to them by the Board of Trade."

The Council, on the understanding that it was in no way thereby committed as to its policy, permitted Mr. A. L. C. Fell, general manager of the tramways department, to serve on the Committee.

The country having been divided into areas, placed under sub-committees of the Board of Trade Committee, and representatives of the tramways undertakings in each area having been invited by the Board of Trade to act in a consultative capacity as local advisory committees, the Council, on February 19, 1918, appointed Mr. G. H. Hume, chairman of the Highways Committee; Mr. A. H. Scott, vice-chairman; and Mr. J. K. Bruce, traffic manager, to represent the Council at a meeting of the representatives of the tramways undertakings in the area (No. 1) in which London was included, in connection with the appointment of a local advisory committee.

Amongst other matters, questions in connection with the supply of materials have already engaged the attention of the Board of Trade Committee. Much of the material required for the maintenance of the tramways undertaking is obtainable only after consent to supply or manufacture has been obtained from H.M. Government, acting through the Priority Committee of the Ministry of Munitions, facilities being given by means of priority certificates. The Board of Trade Committee are represented on the Priority Committee, it being the special duty of the representative of the Board of Trade Committee to see that adequate consideration is given to the requirements of the tramways industry, and to follow up any authority given by the Priority Committee with regard to the supply of tramway materials.

Until quite recently the greatest difficulties and delays were experienced in obtaining materials absolutely necessary for the maintenance of the Council's tramways owing to failure or difficulty in establishing before the Priority Committee a case for consent or priority. In the absence of a clear policy on the part of the Government with regard to the requirements of tramways, the general manager had to devote much time to supporting numerous applications to the Priority Committee; and although the requirements of the Council's tramways were in many cases attributable, directly or indirectly, to purposes demonstrably of national importance, the greatest difficulty was experienced in obtaining, merely on the representation of the Council and without support from the Government, the required consent to material being obtained, or, in cases in which consent was not withheld, the degree of priority which the circumstances appeared to justify. By reason, however, of the responsibilities of the Board of Trade Committee towards tramways essential to the prosecution of the war, and the representation of that Committee on the Priority Committee, a more definite basis has been established for the determination by the Priority Committee of applications from tramway undertakings.

With regard to the supply of rails, during the year 1917 great efforts were made, though unsuccessfully, to obtain consignments of rails necessary to keep the Council's tramways in a reasonable state of repair. Ultimately, a letter was received by the general manager of the tramways department from the Director of Steel Production to the effect that no supplies of rails were being allowed to any Corporation in Great Britain. On February 5, 1918, the Board of Trade Committee were informed that the need of track rails and fishplates for the Council's tramways was very urgent, and on February 25 the secretary of that Committee wrote to the effect that the Committee had met with some success in obtaining supplies, and expected at an early date to allocate minimum quantities. The Committee were then advised that the Council's minimum necessities for the year 1918-19 were 1,000 tons of track rails and 50 tons of fishplates, of which 450-500 tons of rails and 30 tons of fishplates were required for immediate renewals. Early in March, 1918, information was received that orders had been placed with the rail makers to undertake the rolling of rails to a specified tonnage every three weeks, 175 tons being the quantity allocated to the Council out of the first rolling. This quantity has now been rolled and part has been delivered. It is understood that priority certificate No. 4 (a certificate of high priority and of great advantage in obtaining deliveries) has been given for the 50 tons of fishplates.

The difficulty experienced by many tramway undertakings in obtaining delivery of materials from contractors—many of the large contractors being engaged on work of national importance, which had to take preference over all other orders—was the subject of a letter reported by the Highways Committee on March 26, 1918, from the Board of Trade Committee, who expressed the view that under present conditions the regulation or practice of inviting tenders should be temporarily discontinued so that orders for materials could be placed where delivery could best be made. On the recommendation of the Highways Committee, and as an experiment until October 31, 1918, the Council, on March 26, decided to suspend the ordinary procedure with regard to the invitation of tenders for tramway stores and equipment to the value of £250.

The general manager has presented to the Highways Committee a summary of action taken by the Board of Trade Committee in various matters bearing on the Council's tramway undertaking. The matters referred to, in addition to the supply of track rails and fishplates (referred to above), are as follow :—

The Obtaining of Materials.

Supply of Conductor Rails.—On February 5, 1918, the Board of Trade Committee were informed that 1,320 tons of conductor rails were required for renewals during the year 1918-19, and on February 25 they gave notice that a priority (No. 4) certificate for the manufacture had been granted by the Priority Committee on February 24. It is understood that 465 tons have now been rolled.

Supply of Special Track Work.—The Board of Trade Committee on March 2, 1918, were asked to endeavour to obtain permission for the manufacture of 300 tons of castings for the year 1918-19; and on April 11 the secretary wrote stating that arrangements had been made with the makers to supply this quantity.

Supply of Stores and Special Parts for Rolling-stock, etc.—Representations were made to the Board of Trade Committee on January 23, 1918, as to the difficulty in obtaining supplies of special parts, which, if delivered, would release a large number of cars; and the Committee were instrumental in obtaining, in a number of cases, certificates of higher priority.

Police Regulations.

The Board of Trade Committee have been in negotiation with the police authorities, with the result that certain regulations affecting tramways in the London area have been modified or other action taken, viz. :—

Licensing of Cars.—The concession made to the Council with regard to renovation was to be extended to all Metropolitan tramway undertakings.

Extended Use of Trailers.—The Commissioner of Police for the Metropolis promised to give sympathetic consideration to applications to run trailer cars on suitable routes in the Greater London area. The only undertakings having statutory authority to run trailer cars are those of the Council, whose powers are limited to lines south of the Thames, on the Embankment, and certain bridges, and the London United Tramways Company, which has power to run trailer cars on routes approved by the Board of Trade. In certain cases the consent of the local authority is also necessary.

Licensing of Women Conductors.—With regard to the issue of licences, the Commissioner of Police agreed to a reversion to the former system of procedure under which inquiries as to the character of applicants would be conducted by the tramway authorities concerned—an arrangement which will considerably facilitate the method of dealing with applicants.

Supply of Labour—Sale of Cars—Coal Consumption.

The Board of Trade Committee are taking steps, in consultation with the Ministry of Labour, with a view to obtaining men for work in various branches of the Council's tramway service, and the Committee are in constant communication with the Ministry on the matter. In the meantime the Council has been promised superpriority with regard to the supply of motormen, and though the negotiations have been disturbed owing to the provisions of the Military Service Act, it is hoped that the Committee will be able to render valuable assistance in this matter.

On March 14, 1918, at the request of the Board of Trade Committee, the Highways Committee authorised the sale of six cars to the Southampton Corporation, and the question of the disposal of ten single truck cars to the Sheffield Corporation has recently been under consideration. On April 25, 1918, the sale of these cars was sanctioned, subject to any views which might be expressed by the Board of Trade Committee.

The Board of Trade Committee, instructed on the matter by the Board of Trade, notified tramway authorities, including the Council, that they must at once reduce their coal consumption by at least 15 per cent. The Committee made various suggestions for economising coal, viz.: (i) reduction of services not required in the national interest; (ii) withdrawal of services for the whole or part of Sundays; (iii) stopping of cars at an earlier hour in the evening; (iv) partial substitution of coke locally produced for coal at present consumed; (v) grant of a bonus to motormen for economy in power.

The question of coal consumption is receiving the close attention of the Highways Committee, who propose to report upon it to the Council in due course.

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COST OF QUEENSFERRY TRAMWAY SCHEME.

Revised estimates are now before Edinburgh Tramways Committee of the cost of the proposed tramways from Edinburgh to Queensferry. The original estimate was £225,000, but this has now been increased to £343,849. The difference is made up of cost of extensions though Queensferry and to Port Edgar, three miles longer distance on the highway instead of cutting across fields, electric equipment and sites, rise in price of labour and materials, and additional rolling stock. The figures assume an increase of 50 per cent. over pre-war cost. Mr. Hamilton and Mr. Fisher, who previously advised the Corporation, have made estimates of revenue and working expenses. One estimate puts the revenue at £43,000 and the expenses at £24,375, while the other gives the figures as £41,970 and £22,855 respectively. The revenue is based on fares of a penny per mile, while an estimate made last year was based on 6d. a single journey of about eight miles. The higher fares are required to meet the increased wages now given to tramway employees. The proposed through fare of 8d. compares with a motor omnibus fare of 10d., and a railway fare of 1s. 2d. The working expenses are based on an average of 9d. per car mile, an increase of about 50 per cent. on the first estimate. The debt charges are put at £16,253, leaving a net annual surplus of about £2,600. The experts consider the scheme economically sound.

THREATENED STOPPAGE AT BELFAST.

NOTICE GIVEN TO EMPLOYEES.

Unless a solution can be found in a few days for the difficulty in which the Belfast Tramways Committee find themselves, the citizens will be deprived of the tramway service. At a special meeting of the Town Council which was held on May 15, the report and recommendation of the Tramways Committee regarding the situation arising out of the last wages award by the Committee on Production, giving the tramway employees an increase of 8s. a week, was presented. The Committee reported the result of a visit of a deputation, consisting of the vice-chairman, the city accountant, the town solicitor and the tramways-manager, to London to try to obtain from the Government some relief. They were unable to obtain a hearing from the Select Committee appointed by the Government, and had to return with no definite promise. Under the circumstances the Committee recommended the Corporation to give the men a week's notice and to suspend the tramway service entirely unless the summonses issued by the men under the Munitions of War Act for the non-payment of the increase were withdrawn. In a short statement the town solicitor explained the restrictions as to maxima fares which were imposed by Act of Parliament. At present the Corporation were almost at the limit of this maxima. The Aberdeen clause made it obligatory upon them to make the revenue meet the expenditure. They had no power to put the undertaking on the rates. Owing to the various increases in wages, amounting to 20s. a week in excess of pre-war wages, the Council were now unable to comply with that obligation. It was estimated that there will be a deficit of £56,520. If the fares were raised to the maxima the manager estimated that this amount would be reduced to £32,000. What the Corporation desired was, first, the removal of the maxima limits, and the removal also of a stipulation allowing them to alter fares only once a year. The crisis was precipitated by the men summoning the Corporation before the Munitions Tribunal. The exercise of patience on the part of the men might enable a solution to be arrived at, but if they persisted the only thing possible for the Council was to discontinue the service. After a long discussion, resulting in the adoption of the report, the Lord Mayor said that everyone deplored the possibility of the running of the cars being stopped, and it was the duty of the Government to step in and give a guarantee.

SKIP-STOP SERVICES IN AMERICA.

The United States Fuel Administrator has issued the following order:—

"Bulletin No. 11. Electric Service Applied to Fuel Conservation.—The regular passenger stopping places for electric railways should be spaced so as not to exceed eight per mile in urban districts and six per mile in suburban districts. On inter-urban lines the regular passenger stopping places should not exceed four per mile. Where safety stops are necessary they shall, so far as practicable, be combined with the passenger stops. Furthermore, good practice dictates that the stopping places shall be clearly defined by suitable signs. The railway company will be ordered to erect signs in advance at the proposed stopping places so that the public may be thoroughly informed as to the changes to be made in the operation."

In accordance with this order the Public Service Commission of Pennsylvania recently instructed the Pittsburg City Railways to adopt skip-stop service on three of its routes. The order mentions that an investigation of operation on certain lines shows that the delays and congestion are partly due to the practice of having frequent stops. A study of the traffic has proved that a number of these stops can be eliminated without interfering with the convenience of the public. The stopping signs are to consist of a circular disc with white background, upon which is to be painted in black the words "Car Stop," and which, with its attachments, is to be suspended from the span wire at and over the place where the car stops.

The skip-stop plan has also been introduced in Washington. The points at which the cars now stop are indicated by circular signs painted yellow with "Car Stop" in black letters. A saving in running time of 15 per cent. is expected. The *Washington Times* remarks that there were at first some "kicks" because of the confusion in locating car stops; but, on the whole, the public, who are adjusting themselves to all sorts of over-turning in their lives, regard the skip-stop plan as about the best thing they have had imposed upon them. Great satisfaction has been caused by the saving of running time. In a number of other cities throughout the country the skip-stop plan is being adopted.

REDUCTION IN CAR SERVICES.

For the first time for over a quarter of a century, no tramway cars ran in West London on Sunday last before 2 p.m., the services being discontinued in order to comply with the requirements of the Board of Trade for a reduction in coal consumption. The last cars left Hampton Court about 10 p.m., and as a consequence omnibuses were overcrowded.

The general manager of Bradford Corporation tramways recently reported to the Tramways Committee that in view of Government restrictions imposed on tramway traffic in certain districts which he thought might shortly be applied to Bradford, and for other reasons, alterations in the way of curtailment of car services were likely to become necessary from time to time, and he asked the Tramways Committee for instructions in the matter. The committee authorised the manager to alter the services as he may deem advisable as the need arises.

MISCELLANEOUS NEWS AND NOTES.

Accelerated Service at Swansea.—As a result of cutting out stopping places, the Swansea tramway service has been much accelerated.

Women Drivers at Huddersfield.—The Huddersfield branch of the Amalgamated Association of Tramway and Vehicle Workers have protested against the employment of women as tramway car drivers.

Staggered Hours.—The Public Utility Commission of Washington proposes to take up the plan of staggered hours for the different Government bureaux and departments. The Federal Trade Commission has already begun this reform by voluntarily advancing its opening hour by thirty minutes.

Objection to Alien Tramway Passengers.—At Douglas Town Council a suggestion was made that Baron von Bissing should be prohibited from travelling by the corporation tramway cars as his presence was likely to irritate people whose relatives had been killed in the war. The proposal received no support.

Leeds Parcels Carrying Scheme.—The Leeds City Tramways parcel carrying scheme is to be extended within the next few weeks by the opening of additional depots on various sections. It is proposed to allow 5 per cent. discount to purchasers of parcels carrying stamps of £5 and upwards, and monthly accounts are to be allowed on contracts.

Further Demands of Tramway Employees.—The Special Committee appointed by municipal tramway authorities on April 26, to consider the national demand of tramway workers for a 12½ per cent. bonus, met in London on Wednesday. After some discussion, a sub-committee was appointed to deal with the matter with instructions to oppose the application when the question is taken to arbitration.

Parcels Traffic for Sheffield.—The Sheffield Chamber of Commerce is in favour of the proposals of the Corporation contained in their Consolidation Bill of 1918 relating to the carriage of minerals, goods, and other commodities on the tramways so far as they relate to the exercise of the powers within the city limits. Outside the city area the Chamber is in favour of the Corporation obtaining powers to carry tradesmen's parcels of light weight, but not minerals or other goods of any kind.

Walsall Motor Omnibuses.—The Birmingham and Midland Motor Omnibus Company, having unsuccessfully appealed against a conviction by the Walsall Justices for plying for hire with unlicensed omnibuses, the company applied to the Corporation for licences. On this, the Watch Committee reported that the present duplication of tramway and omnibus traffic in Birmingham Road was not justified, expressed regret that the company had declined to fall in with proposals to avoid the duplication, and again refused to grant the licences.

Collision between Tramway Car and Omnibus.—At about one o'clock on May 11 a Putney to Homerton motor omnibus and a London County Council tramcar came into collision in Mare Street, Hackney. The vehicles, which were crowded with passengers, were proceeding in opposite directions at the time. Six of the passengers received injuries which necessitated their being taken to Hackney Infirmary, where three were detained. Although the impact drove the front part of the tramcar on to the fore carriage of the omnibus, neither of the drivers was injured.

An Important Dispute in Edinburgh.—According to local reports it is probable that an important arbitration will take place as between Edinburgh Corporation and Edinburgh Tramways Company in regard to the state in which the undertaking is to be handed over to the Council at the coming expiry of the lease to the company. The undertaking, it is provided, is to be left in workable order, and the Corporation view is that about 25 miles of line should be relaid. The company consider that only five miles require relaying. The respective costs are put at about £120,000 and £25,000. Sir Alex. Kennedy is to be the arbitrator.

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Fine for Refusal to Show a Ticket.—A passenger was summoned by the London County Council at the South-Western Police Court for having failed to show his ticket when a passenger by a tramway car in Wandsworth Road. It was stated that when asked by the inspector to produce his ticket, the defendant said in the first instance that he could not find it. Subsequently, he was seen with the ticket in his hand, but refused to part with it, and gave the number only. The defendant explained that he hesitated to surrender the ticket as he wished to retain it for his own protection. The magistrate said that he had acted very foolishly, and he was fined 20s.

American Tramway Convention.—The American Electric Railway Association and various affiliated associations will hold their annual convention at Atlantic City during the second week in October, but in view of war conditions there will be no exhibition. Opinion has been divided as to whether there should be any convention this year, but after thorough consideration the Council of the Association, in view of the fact that there were so many questions of vital interest to electric tramway companies arising out of the war the discussion of which would be generally helpful, decided that the convention should be held, although it will be shorn of many of the usual ancillary interests.

New Radial Trucks.—The New York *Electric Railway Journal* says that the practicability of the radial (single axle) truck, particularly for medium length cars, has been demonstrated on several tramways. The Inter-urban Railway of Hutchinson, Kansas, for instance, has in service a car equipped with a radial truck; and Mr. J. E. Humbert, the general manager, has reported that the car rides as easily as a double truck car, and runs at a maximum speed on inter-urban track without trouble. He stated also that the car uses less energy, takes the shortest curve, and binds so little that it will start on the first point from a dead stop in the middle of a curve of 45 ft. radius. The car, exclusive of trucks, weighs 10 tons and is 33 ft. long over all.

Economy of Electric Goods Haulage.—From the annual report of the Norfolk and Western Railway for the year ended December 31, 1917, it appears that the average maintenance cost per 1,000 ton miles for steam goods locomotives was about 16d., while that for electric locomotives was 5d. This indicates not only that electric locomotives are maintained with much greater economy, but that an electric locomotive hauls much more goods over a certain length of track than a steam locomotive. At present both steam and electric locomotives are used on the electrified sections of the railway, and it is a notable fact that the cost of goods haulage in the zone where electric locomotives were in use during October, 1917, when the conditions were normal, was 26 per cent. less than if steam locomotives only had been used. Exact comparison is impossible owing to the method in which the accounts are presented, but there can be no doubt that the electric locomotives have been found very satisfactory.

PERSONAL.

Mr. E. C. Okell, electrical engineer of Plymouth Corporation, has been granted an increase in salary of £50, to £700 per annum.

Mr. C. J. Spencer, general manager of Bradford Corporation tramways, has been recommended by the Tramways Committee for an increase in salary from £800 to £1,000 per annum.

Mr. Isaac Hirst has been presented with an oak barometer by the employees of the Keighley Corporation tramways department on his retirement from the post of traffic superintendent, after fourteen years' service.

Mr. P. Priestly, manager of Oldham Corporation tramways, who was recently appointed deputy manager of the Liverpool Corporation tramways, has been presented by the employees at Oldham with a cabinet of cutlery.

Mr. L. E. Pickin, who for the past eighteen years has been secretary of the United Electric Car Co., Ltd., of Preston, has resigned that position to take up an appointment as general manager of an important manufacturing company in the London district.

Mr. C. H. Smythe, who has been chief assistant engineer of the electricity department of St. Marylebone Borough Council, has been appointed acting chief engineer in succession to Mr. A. H. Seabrook, who recently resigned to take up a position of national importance.

Colonel R. E. B. Crompton, C.B., who has been chairman of the Commercial Motor Users' Association for about fifteen years, has been unanimously nominated by the general committee of the Association as its president. Mr. E. S. Shrapnell Smith, who has been honorary treasurer of the Association since its formation in 1913, will be the new chairman of the committee.

Major Arthur Watson, who has been superintendent of the line for several years, has been appointed also assistant general manager of the Lancashire and Yorkshire Railway Company. Major Watson was educated at the Manchester Grammar School and the Victoria University, Manchester, and in 1890 was articled as civil engineer to the chief engineer of the railway. He served as assistant resident engineer from 1893 to 1897, becoming subsequently divisional engineer for Manchester and resident engineer in charge of extensive construction work. He was appointed chief assistant engineer in 1905, and held that position until he became superintendent of the line in 1911. In 1914 he was appointed a member of the Railway Executive Committee, and was granted a commission as Major on the Railway Engineers' Staff Corps.

FINANCIAL REPORTS AND MEETINGS.

Shanghai Electric Construction Co., Ltd.—A dividend has been declared of 5 per cent. (10s. per share) less income tax on the ordinary shares, making 10 per cent. for the year, with a bonus of 2½ per cent., free of tax, payable on June 1. £10,000 has been allocated to reserve for renewals and £5,000 written off preliminary expenses.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended May 15 amounted to £59,968, a decrease of £1,347 as compared with the corresponding period last week. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to May 15 (six and a half weeks), the total receipts were £367,619, an increase of £30,429 on the corresponding period of 1917.

Depreciation Allowances at Glasgow.—On the advice of the general manager, the Glasgow Corporation Tramways Committee recommend that the sums to be set aside for depreciation for the year till 31st current should be as under:—Permanent-way, £400 per mile of single track, £78,510 18s. 2d.; power stations and substations plant, 3 per cent., £13,915 5s. 9d.; cars and electrical equipment of cars, 5 per cent., £27,923 13s. 2d.; other rolling-stock, 15 per cent., £2,829 17s. 9d.; Clydebank bridges, 5 per cent., £550—a total of £123,729 14s. 10d.

Nelson Corporation Tramways.—In his report for the year ended March 31, 1918, Mr. G. F. Nayler, the electrical engineer and manager, states that there was a loss in the electricity department of £1,987, while the profit on the tramways amounted to £615. The year has been one of great difficulty owing to the high price of material and coal freightage. Another factor was the bad condition of the lighting battery for much of the year, owing to the delay in obtaining permits from the Ministry of Munitions for lead. The difficulty of maintaining the rolling-stock has been very great, as for almost every class of goods a permit had to be obtained from the Board of Control. The system of clocks for the more accurate checking of the arrival and departure of cars at the termini has been found of great assistance.

Potteries Electric Traction Co., Ltd.—The report for the year ended December 31, 1917, shows that the revenue amounted to £176,745. The traffic and parcel receipts were £160,060, an increase of £24,941 as compared with the previous year. The expenses increased by £24,972, although many repairs and practically all renewals have been deferred, but the sum of £2,516, representing the loss on the conversion into War Stock of the parliamentary deposits lodged in Consols and recently released, has been included in this figure. After deducting expenses chargeable to revenue, including £11,025 for debenture interest, and a provision of £10,000 for renewals, there is a balance of £34,444 as compared with £33,151. Including the balance of £7,261 brought forward from the previous year, there is an available balance of £41,075, which the directors recommend should be allocated as follows:—To reserve account, £12,500; dividend on preference shares at 5 per cent., £12,250; dividend on the ordinary shares as 3½ per cent., £8,575; balance carried forward, £8,380. The reserve now stands at £57,932, and the renewals fund at £55,738. War wages and bonuses have been twice increased during the year, and since the closing of the accounts a further increase has been awarded, making the total amount now paid in war wages and bonus to male employees, 20s. per week, and to women 13s. per week over pre-war rates of pay. The Corporation of Stoke-on-Trent have finally decided not to execute the agreement providing for the postponement of their right to purchase the tramways within the borough until December 22, 1932. The period has now expired in which the Corporation were entitled to give notice to purchase the tramways, and their right does not arise again until the years 1924 and 1932 respectively The directors have decided to increase the fares now in force to enable suitable reserves to be accumulated and to meet the increased cost of working brought about by the war.

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Complete Equipment

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

DIVIDENDS PREV.	DIVIDENDS LAST.	NAME.	PAID.	PRICE, JULY 27, 1914.	CASH May 16 or previous.	A WEEK AGO.
5%	5%	Alabama Traction 6% 1st Mt. ..	—	67	66⅛	67⅛
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅛	57/6	56/3
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4⅛	48/9	48/9
4%	4%	Do. 4% Deb.	100	91	69½	65½
4½%	4½%	Do. 4½% Deb.	100	98½	68	67½
5%	5%	Do. 5% Deb.	100	96	64½	63
—	—	Associated Omnibus Co., Ord. ..	5/-	3/4	1/2	1/2
1/-	6d.	Auckland Elec. Trams. Ord. ..	1	1 3/4	20/4½	20/4½
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	108½	108½
—	1/-	Bath Electric Trams Pref. Ord.	1	½	3/6	3/6
6d.	6d.	Do. 5% Cum. Pref. ..	1	3/4	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
20/-*	28/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Do 6% Cum. Pref. ..	10	11½	9 1/16	9 1/16
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	42½	43
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	86½	85½
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5½	5½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91	90½
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	33	34
6%	5%	Do. Pref. Ord.	100	106	41	41
5%	5%	Do. 5% Cum. Pref. ..	100	103	60	58½
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	83½	83½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	63½	62
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	31½	31½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	74	74
5%	5%	Do. 5% Deb.	100	92	77½	76½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	63½	63½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	77½	77½
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6½	7 1/2
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	81/3	81/3
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1	1/16	13/-	13/-
1/3	1/3	City of B. A. Trams	5	5½	79/4½	80/-
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	82	82
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	59½	59½
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 3/4	7 3/4
6/-	6/-	Do. 6% Pref.	10	12	10½	10½
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/3	1/3
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1	1/16	10/3	10/3
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
5½d.	8½d.	Hong Kong Tramway	5/-	3/16	17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80	80
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	½	2/4½	2/4½
9/6	9/6	Lanarkshire Trams Co. ..	10	10½	10 1/16	10 1/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79½
9¾d.*	7½d.*	Llandudno & Colwyn B. Ord. ..	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	1/16	2/4½	2/4½
6d.	6d.	Do. 5% Pref.	1	1/16	6/2	6/-
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	60	60
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80½	80½
5%	5%	Do. 5% Inc. Deb.	100	88½	76	76
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	38½	38½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	82/6	82/6
5%	5%	Do. 5% Deb.	100	100	84½	84½
7½d.%	9d.*	Manaos Trams & Ltg. Ord. ..	1	3/4	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	68	68
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	73½	73½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	69	69
5%	5%	Do. 5% Deb.	100	87	76½	76
$1½	$1½	Mexico Trams. Common ..	$100	70	24	24½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	36½	36½
—	—	Do. 6% Mt. Bds. ..	100	76	29	29½
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	93½	93
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	92½	92½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	1/2	18/3	17/10½
9½d.*	9½d.*	New General Traction	1	½	7/1½	7/1½
6d.	8½d.	Northern Gen. Trans. Ord. ..	1	1/16	12/9½	12/9½
3/-	4/-	Para Elec. Rlys. Ord.	5	4½	78/9	78/9
5%	5%	Do. 5% 1st Deb.	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	7/-	6/9
—	—	Do. 7% Non. Cm. Part Pf.	1	—	13/6	13/7½
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1	1/16	6/6	6/6
6d.	6d.	Do. 5% Pref.	1	1/16	12/6	11/10½
8d.	1/4	Provincial Trams. Ord. ..	1	¼	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80	80
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	87½	87½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	72½	71½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	84½	86½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	69½	70½
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
8d.	8d.	Singapore Elec. Trams. ..	5/-	½	4/6½	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	94	94
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	78	78
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	35/-	35/-
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	57	60
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	½	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	½	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	72	72
—	—	Metropolitan Dist. Ord. ..	100	21½	14½	14½
—	—	Undgd. Elec. Rys. of London ..	10	21½	33/9	30/7½
		Do. "A"	1/-	½	4/9	4/6
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	105	104
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	98½	99
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	77	76½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C. ..	Apr. 30	386	473	+ 87	4	2,157	+ 352
Aberdeen Corporation ..	May 8	2,167	2,269	+ 102	49	106,975	+ 14,709
Ayr Corporation	,, 11	337	449	+ 111	52	23,063	+ 3,486
Belfast City	,, 10	5,831	7,738	+ 1,907	6	45,720	+ 11,240
Birkenhead Corporation ..	,, 12	1,718	2,100	+ 382	6	12,047	+ 2,165
Blackburn	,, 8	1,374	1,672	+ 298	7	10,668	+ 2,152
Bradford Corporation ..	,, 4	7,009	7,437	+ 428	5	37,492	+ 2,826
Burnley Corporation ..	,, 11	1,750	2,109	+ 359	..	..	..
Burton-on-Trent Cor. ..	,, 12	265	383	+ 118	6	2,292	+ 691
Bury Corporation ..	,, 12	1,550	1,974	+ 424	6	10,586	+ 1,185
Chatham & District ..	,, 9	1,296	1,301	+ 5	19	21,571	+ 518
Cork Electric	,, 2	585	591	+ 6	18	10,201	+ 1,960
Derby Corporation ..	,, 11	1,123	1,460	+ 337	6	8,319	+ 1,884
Dundee City	,, 8	1,457	1,589	+ 132	51½	80,444	+ 9,966
East Ham Corporation ..	,, 11	1,388	1,408	+ 20	5½	7,763	+ 154
Exeter Corporation ..	Mar. 22	302	373	+ 71	51	20,106	+ 301
Glasgow Corporation ..	May 11	26,044	28,385	+ 2,341	49⅜	1,319,573	+ 150,236
Glossop (U.E. Sup. Co.) ..	,, 11	150	182	+ 32	19	3,393	+ 939
Halifax Corporation ..	,, 7	2,277	2,488	+ 211	5½	13,292	+ 1,699
do. Motor Buses ..	,, 7	38	55	+ 17	5½	295	+ 57
Huddersfield Corporation	,, 11	3,047	3,481	+ 434	6	21,034	+ 2,411
Ilford U.D. Council ..	,, 11	706	935	+ 229	6	5,400	+ 1,477
Ipswich Corporation ..	,, 11	603	679	+ 76	6	3,870	+ 1,141
Isle of Thanet	,, 11	277	216	— 61	32	5,851	— 2,233
Kilmarnock Corporation ..	,, 11	204	239	+ 35	51½	10,904	+ 1,896
Lanarkshire	,, 9	2,751	3,463	+ 712	19	60,945	+ 14,786
Lancashire United	,, 8	2,199	2,882	+ 683	19	48,874	+ 14,389
Leeds City	,, 11	10,606	11,454	+ 848	6	67,344	+ 8,854
Leicester Corporation ..	,, 11	3,523	4,480	+ 957	..	..	..
Leyton U.D. Council ..	,, 9	1,863	2,032	+ 169	6	11,481	+ 1,039
Liverpool Corporation ..	,, 4	15,658	17,992	+ 2,334	17⅜	297,660	+ 46,138
Llandudno & Colwyn Bay	,, 3	250	338	+ 88	22	5,978	+ 1,562
London County Council ..	,, 15	61,315	59,968	— 1,347	6½	367,619	+ 30,429
Maidstone Corporation ..	,, 9	207	268	+ 61	5½	1,619	+ 319
Manchester Corporation ..	,, 11	20,360	25,382	+ 5,022	6	143,240	+ 30,874
Newcastle-on-Tyne Cor. ..	,, 4	7,451	8,734	+ 1,283	5	42,547	+ 8,775
New St. Helens & Dist. ..	,, 8	1,232	1,547	+ 315	45	63,048	+ 14,745
Northampton Cor.	,, 10	743	816	+ 73	6	5,116	+ 856
Nottingham Corporation ..	,, 9	4,066	5,693	+ 1,627	6	30,051	+ 7,757
Oldham Corporation ..	,, 12	2,778	3,428	+ 650	7	22,370	+ 3,891
Reading Corporation ..	,, 2	965	1,187	+ 222	5	5,421	..
Rhondda Tramways ..	,, 2	1,466	1,720	+ 254	18	24,628	+ 5,041
Rotherham Corporation ..	,, 15	1,680	2,043	+ 363	7⅜	13,370	+ 2,365
Sheffield Corporation ..	,, 13	11,696	13,568	+ 1,872	6½	90,581	+ 13,196
Southampton Cor.	,, 8	1,804	2,493	+ 688	5½	13,129	+ 3,521
Southend-on-Sea Cor. ..	,, 8	761	852	+ 91	6	4,111	— 48
South Shields Cor.	,, 4	862	1,015	+ 153	5	5,184	+ 1,108
Sunderland Corporation ..	,, 12	1,630	2,093	+ 463	6	12,396	+ 2,595
Sunderland District	,, 1	685	954	+ 269	26	22,224	+ 5,844
Swindon Corporation ..	,, 8	262	324	+ 62	5½	1,634	+ 310
Torquay Tramways ..	,, 2	568	810	+ 242	18	12,515	+ 4,053
Tyneside Trys. & Trmrds	Apr. 24	725	908	+ 183	17	14,221	+ 3,803
Wallasey Corporation	May 11	1,366	1,744	+ 378	5½	9,722	+ 1,790
Walsall Corporation ..	,, 11	885	1,194	+ 209	6	6,945	+ 1,649
Walthamstow U.D. Coun. ..	,, 11	1,237	1,405	+ 168	6	7,543	+ 1,083
Warrington Corporation	Apr. 18	475	719	+ 244	3	1,863	+ 618
West Ham Corporation	May 9	3,635	4,150	+ 516	5½	22,030	+ 2,563
Wigan Corporation ..	,, 9	1,853	2,286	+ 433	6	13,228	+ 3,153
Yorkshire (West Riding)	,, 12	2,128	2,565	+ 437	19	45,856	+ 10,254

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Birmingham, Blackpool, Blackpool and Fleetwood, Bolton, Bournemouth, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Dublin United, Glasgow Subway Co., Hastings, Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Nelson, Newport (Mon.), Portsmouth, Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	May 13	£53,048	£56,634	19	£1,053,336	+ £76,595
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Feb. 24	3,196	3,902	48	40,644	+ 1,316
Brazilian Traction (Mlrs.)	Mar.	7,549,000	8,094,000	13	23,246,000	+ 1,559,000
Brisbane	Apr.	31,620	35,530	17	137,569	+ 9,789
British Columbia .. $	Mar.	456,626	510,892	39	4,495,271	+ 423,266
Buenos Aires Lacroze ..	Apr.	39,111	41,643	43	388,064	+ 2,601
Burmah Tram. & Light Rs.	Mar.	27,132	27,906	34	212,142	+ 991
Calcutta .. .. Rs.	May 11	67,244	74,568	19	1,354,753	+ 88,027
Cape Town	Mar.	17,688	19,911	..	..	..
Carthagena and Herrerias	Apr.	4,366	4,200	17	17,558	+ 3,032
Cordoba	Feb.	11,896	12,972	47	147,938	+ 435
East India	Apr.	1,445	1,791	39	12,287	— 5,398
Hong Kong .. .. $	Mar. 16	12,121	12,349	11	153,745	+ 2,605
Kalgoorlie	Jan.	2,431	2,522	4	2,522	+ 91
La Plata	Apr.	4,230	5,169	17	19,972	+ 2,807
Lima	Mar.	37,586	42,106	13	127,555	+ 18,900
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	Mar.	33,945	42,911	17	320,724	+ 43,632
Manaos .. .. Rs.	Feb.	144,532	133,591	8	285,462	+ 5,563
Manila (8 weeks) .. $	Feb. 23	73,200	93,000	8	93,000	+ 19,800
Montevideo	Apr.	29,230	33,704	22	206,037	+ 19,415
Pernambuco	May 5	3,612	4,442	22	82,767	+ 18,319
Peruvian .. .. $	Apr.	957,500	1,079,880	43	10,402,440	+ 1,142,548
Port Elizabeth	Mar	4,428	4,425	..	..	..
Rangoon	Apr.	5,036	5,845	17	22,863	+ 2,363
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Mar 23	12,890	13,407	12	160,914	+ 1,429
Toronto .. .. $	Mar.	901,192	1,113,472	13	3,163,724	+ 237,496
Winnipeg .. .. $	Mar	293,094	307,289	13	940,830	+ 47,074

Wanted.—Copies of the TRAMWAY AND RAILWAY WORLD, Volume XXXIX, No. 1 (January 1, 1916), to complete files for binding.—Reply to Box, 24, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

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CONTRACTS AND ORDERS.

Heywood Council are about to purchase a motor lorry and a motor ambulance.

East Riding Council propose to purchase a tipping wagon at an estimated cost of £1,034.

Nova Scotia Tramways Power Company, of Halifax, N.S., is reported to be considering the purchase of cars, equipment, and generating machinery.

Hampstead Borough Council intend to purchase two electric trucks for handling coal at the electric lighting station, at a cost of £1,117. It is estimated that the use of these trucks will result in a saving of £300 a year.

BUSINESS NOTICES.

Tramway Supplies, Ltd.—Owing to the change over to the automatic telephone system at Leeds, which takes place to-day, the telephone number of Tramway Supplies, Ltd., 160, Woodhouse Lane, Leeds, has been altered to "26883 Leeds."

Messrs. Drake & Gorham have acquired for their wholesale sales department more commodious premises than they have hitherto occupied. Their new address is Felix House, 67, Long Acre, London, W.C.2. (Telephone number: Regent 3338. Telegraphic address: "Dragorlite.")

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Newcastle-on-Tyne Corporation Tramways
Cork Electric Tramways and Lighting Co., Ltd.
Isle of Thanet Electric Tramways Company, Ltd.
Keighley Corporation Tramways
Keighley Corporation Motor 'Buses
Burton-on-Trent Corporation Tramways
Scarborough Electric Tramways Co., Ltd.
Aberdeen Suburban Tramways Co.
Paisley & District Tramways Co.
Hastings & District Electric Tramways Co., Ltd.
Gosport and Fareham Tramways Co.
Doncaster Corporation Tramways
Cardiff Corporation Tramways
Plymouth Tramways
Gloucester Corporation Light Railways
Ilkeston Corporation Tramways
Stockport Corporation Tramways
Ilford Council Tramways
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Particular attention is directed to a chapter on Depreciation and Controlled Establishments under the Munitions of War Act, 1915; and it may be added that the views of the Ministry of Munitions as to the proper treatment of Depreciation of Plant coincide with the views advocated in this work

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What's wrong with the Track?"

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Defects—Causes of fracture—Method of laying concrete.

CHAPTER II.—CONCRETE MATERIALS.
Road metal—Water-gravel—Sand—Clinker-sand—Trass.

CHAPTER III.—REPAIRS TO CONCRETE FOUNDATIONS.
Patching—Partial repairs—Complete renewal.

CHAPTER IV.—TRACK DESIGN.
"Follow my leader" policy—Importance of local conditions—Effect on sub-soil—Standard methods—Transverse sleeper tracks—Effect of vehicular traffic and tramway car traffic.

CHAPTER V.—RAIL PACKING.
Pitch and tar packing—Materials—Testing and preparation of materials—Prepared tar—Pitch mixtures—Movement of rails—Packing and floating.

CHAPTER VI.—RAIL LAYING.
Bad rail packing—Rails canted or twisted—Anchoring and Padding—Rail expansion and contraction—Curving of rails—Springing of rails—Anchoring tracks.

CHAPTER VII.—JOINTS, FISH PLATES, BOLTS AND NUTS
Why joints fail—Dished or hammered joints—Movement at joints.

CHAPTER VIII.—JOINT WELDING.
Methods of welding—Thermit welding—Electric arc welding process—Expansion and contraction—Oxy-acetylene process.

CHAPTER IX.—RAIL WEAR.
At joints—On new tracks—On steep gradients—On wheel tires—Contact of wheel and tire—Leeds special rail section—Railway rails—Depression of check.

CHAPTER X.—COMPOSITION AND MANUFACTURE OF TRAMWAY RAILS AND RAIL WEAR.
Defective rails—Composition of rails—Standard specification—Basic and acid Bessemer process—Sandberg process—Analysis of rails and rail tests—Drop test unnecessary.

CHAPTER XI.—CORROSION OF TRAMWAY RAILS.
Causes of rail corrosion—Exposure to sea water—Effect of corrosive liquid.

CHAPTER XII.—TRACK PAVING.
Effect of vehicular traffic—Cause of loose rails—Importance of quality in setts—Square-dressed setts—Nidged granite setts—Bonawe granite setts—Wood paving—Bedding of setts—Laying and ramming.

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Removal of tracks—Temporary tracks.

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THE

Tramway & Railway World

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NOTICES.

All Communications an Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

CITY OF BELFAST.

Electricity Department.

The Corporation invite tenders for the supply and laying in Belfast of the undermentioned cables, viz.:

About 9,000 yards of 6-core 0·1 sq. in. lead-covered and paper insulated Cable, for 6,600 volts between cores, laid in earthenware troughs, and run in solid with bitumen.

The specification and other particulars may be obtained on application either to Messrs. Preece, Cardew, Snell and Rider, 8, Queen Anne's Gate, Westminster, S.W.1, or to Mr. T. W. Bloxam, M.I.E.E., City Electrical Engineer, Belfast.

Tenders upon the presented form must be lodged in the Town Clerk's Office, City Hall, Belfast, not later than May 31, 1918.

The lowest or any tender will not necessarily be accepted.

An official receipt must be obtained for every tender delivered by hand. Tenders sent by post must be registered.

R. MEYER,
Town Clerk.

GALWAY AND SALTHILL TRAMWAYS COMPANY.

Sale by Tender.

Tenders are invited for the Assets of the Galway and Salthill Tramways Company as a going concern, consisting of the line of trams, which cost over £16,000, the Interest in the Premises at Forster Street, Galway, the Tramcars and other Assets of the Company.

Forms of Tender, Conditions of Sale and particulars can be obtained from

MICHAEL CROWLEY,
Official Liquidator.

16, College Green, Dublin.

COUNTY BOROUGH OF SUNDERLAND.

Water Tube Boilers.

The Corporation are prepared to receive Tenders for the supply and erection at their Electricity Works of two Water Tube Boilers, with Integral Superheaters, Mechanical Stokers, Vertical Cast-iron Tube Economisers, Steel-plate Chimneys, etc., etc.

Specification and form of tender may be had on application to the General Manager, Mr. Alfred S. Blackman, Electricity Offices, Dunning Street, Sunderland, upon payment of a deposit of £1, which will be returned only after a bona-fide tender has been opened.

Tenders, endorsed "Electricity Works Boilers," and addressed to the undersigned at the Town Hall, Sunderland, to be delivered not later than the first post on Wednesday, May 29.

The Corporation do not bind themselves to accept the lowest or any tender.

H. CRAVEN,
Town Clerk.

Town Hall, Sunderland.
May 6, 1918.

POSITIONS VACANT.

EDINBURGH CORPORATION TRAMWAYS.

Appointment of Tramway Manager.

The Corporation of Edinburgh invite applications for the appointment of Tramway Manager for the Corporation Tramways. These Tramways are at present leased to and worked by a Company, but the Corporation will assume their management and working on the expiry of the lease in June, 1919. The Tramway Manager will be expected to make the necessary preparations for the transfer of the management of the present system to the Corporation and its future development. Thereafter he will, subject to the control of the Corporation, be responsible for the management and superintendence of the Tramway system generally.

The Manager will be expected to enter upon his duties at as early a date as possible after his appointment. The salary proposed is £1,000 per annum. A memorandum for the information of candidates for the appointment will be supplied on application to the subscriber. Canvassing of members of the Council is not permitted.

Applications with 20 copies of testimonials must be lodged with the subscriber not later than Saturday, 1st proximo.

ANDREW GRIERSON,
Town Clerk.

City Chambers,
Edinburgh, May 10, 1918.

CORPORATION OF RAWTENSTALL.

Station Superintendent.

The Rawtenstall Corporation invite applications for the above position, at a salary of £226 per annum, including all bonuses. Applicants to have had a good electrical and mechanical training, with experience in cheap steam raising from water-tube boilers.

Applications, accompanied by copies of not more than two recent testimonials, to be delivered to the undersigned not later than Thursday, the 30th instant.

C. L. E. STEWART, A.M.I.E.E.,
Borough Electrical and Tramways Manager.

Bacup Road,
Rawtenstall.
May 18, 1918.

STATION ENGINEERS.

Wanted, two Station Engineers, accustomed to 3-phase, E.H.T. and D.C. plants. Wages 58s. 6d., including war bonus. Applications, stating experience, with recent testimonials, to be sent to the undersigned not later than Wednesday, May 29, 1918.

J. E. STARKIE,
Electricity Works, Burnley.

OVERHEAD LINESMAN.

Overhead Linesman wanted at once on small tramway system, to fill in time as Cable Jointer on low tension network. Ineligible for military service; permanency for suitable man.—Apply, stating wages required, in first instance to Box No. 87, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

FOR SALE.

LEEDS CITY COUNCIL.

The Tramways Committee of the Leeds Corporation invite offers for—

One 15-ton Hand-operated Overhead Travelling Crane, with span of 46 ft. 5½ ins. and 34-ft. lift, in first-class condition.

Specification will be furnished upon application, also permission to view.

Application to be made to the undersigned.

J. B. HAMILTON,
General Manager.

Swinegate, Leeds,
May 23rd, 1918.

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OF EVERY DESCRIPTION.

SAND OR DIE 2 h.p. to 600 h.p.

ROBERT W. COAN,

Telegrams: KRANKASES, ISLING, LONDON. | 219, GOSWELL RD., LONDON, E.C. | Telephones: 3846 CITY. 4879 CENTRAL

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MIDDLESEX.

Telephone: WALTHAM CROSS 132. | Telegrams: HYDRATION ENFIELD

ROLLING STOCK SPECIALITIES.

OUR RATTAN

(NATURAL, GLAZE, DULL FINISH, OR COLOURED)
in twill, straight, or fancy weaves, canvas backed or unbacked, is

BRITISH MADE THROUGHOUT

from the splitting of the cane to the finished article.

We hold **LARGE STOCKS OF RAW MATERIALS** and can GUARANTEE PROMPT DELIVERIES.

Particulars of other **BRITISH SPECIALITIES** *upon application.*

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THE
Tramway AND Railway World

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The TRAMWAY AND RAILWAY WORLD can be obtained, post free, at the following rates :—

FOR THE UNITED KINGDOM—Twenty-five Shillings per annum including 64 issues, of which 12 are illustrated numbers. One Shilling per Single Copy.

FOR ALL PLACES ABROAD—Thirty Shillings per annum.

SATURDAY, MAY 25, 1918.

TRAMWAY AUTHORITIES AND LABOUR DISPUTES.

Some time ago considerable advantage was derived from the fact that for the time being the tramway authorities or most of the tramway authorities in Lancashire and Cheshire banded themselves together for dealing with certain demands put forward by the employees of the tramways in the two counties named. Through the action of widespread trade unions, the employees sought concessions generally from the tramway authorities. Though circumstances differ in different towns it was felt that the best way to deal with a general demand was by common action. The scheme met with considerable success, and in principle it resembles the federations of employers which exist in various other industries. A proposal of the sort was some time ago before the Municipal Tramways Association, and it was felt then that a tramway employers' federation for the whole country would probably not be so satisfactory as a number of district associations, each covering an area possessing some conditions in common. Encouraged by experience of the tentative arrangement the tramway authorities of Lancashire and Cheshire have now decided to form a permanent body called the Lancashire and Cheshire Tramways Authorities' Council. It will be seen from the draft constitution, which is reproduced in our present issue, that the main object of the organisation is to secure mutual support and co-operation in dealing with demands and action taken by workmen on all matters affecting tramway authorities. Practically the whole of the tramway authorities—both municipalities and companies—in the two counties have already agreed to join the Council, and it is expected that none will stand out. In these days of continual demands for increases of wages, the Lancashire and Cheshire Council should prove of special value to its constituent members. If the labour organisations make a general demand applying to all the undertakings in the two counties, such a proposal must clearly be considered by the Council and decided in a way best for the area as a whole. If demands are made on only one or two tramway authorities, then it is advisable that they should be considered by the Council, so that the effect of a concession in a particular case on the rest of the constituent members should be weighed and estimated. If in either of the above cases it is determined to resist a demand, and if a strike is threatened or the question at issue comes to arbitration, more effective resistance will be possible than if the tramway authorities were acting separately and independently. But the very existence of the Council should make threats to strike, let alone strikes, less likely, because the fully organised employers and employed will consider matters with feelings of full responsibility and with wide circumspection. It has been so fully recognised in other businesses that organisations of employers to meet organisations of employed have been productive of good, that it cannot be doubted that similar schemes in the tramway industry will be beneficial. In some other districts of the country similar schemes are being discussed and ultimately a full organisation of the industry on both sides will no doubt be effected. That in its turn would facilitate the setting up of Joint Industrial Councils as recommended by the Whiteley Committee Report.

EDINBURGH-QUEENSFERRY TRAMWAY.

At a special meeting of the Edinburgh Town Council held on May 17, the draft of the provisional order for the construction of the proposed tramway from the city to South Queensferry and Port Edgar was approved. The total cost of the scheme is estimated at £343,849, of which £289,035 is for the track, £21,000 for rolling stock, £15,660 for road widenings, and £18,154 for purchase of lands. Councillor Harrison, convener of the Tramways Committee, said that the Corporation was assured of the support of the Admiralty, that the two county councils concerned were favourable, and that there was not likely to be any opposition from the landlords. If they did not take possession of this ground some private company would come forward and do it instead, and would then demand an entrance to the city, a thing to which the Council had always objected. They were not binding the Council to adopt any particular route in making the tramway, which he hoped would be made when the Edinburgh tramways were re-laid.

Mr. Cameron, in moving delay until after the war, said that the city tramways would pass into the hands of the Corporation next year, and it was their first duty to the ratepayers to prepare a new general plan for the reconstruction of the city tramways, embodying rapid transit and new intercommunicating lines throughout the city. This policy would at once improve the city tramway service and was a sound investment, while the Queensferry tramway scheme was a speculative commercial enterprise. In view of the increasing price of labour and materials, a further 20 per cent. of cost should be added to the probable estimates. He scouted the idea that the tramway would earn 1s. 4d. per mile. Tramway traffic experts had set great value on the prospective tourist and Sunday holiday traffic in the summer time, but the experts had overlooked in their estimates the numerous chars-à-bancs that would run in competition with the tramways in the summer months. After some opposition, in which the financial features were adversely criticised, the scheme was approved by 24 votes to 10.

REDUCTION IN CAR SERVICES.

Bolton Corporation tramways have advanced the hour at which the last cars run from town to 11 o'clock. On Sundays the service will not begin until 1.30 p.m.

Owing to the impossibility of obtaining a new cable for hauling the cars, the Great Orme tramway service has been suspended. The Ministry of Munitions, on account of the great demand for steel cable for war purposes, has been unable to grant a priority certificate.

On account of the difficulty of procuring wood setts, the Corporation have allowed the Bath Tramway Company to lay tarred slag on the old concrete foundations in place of wood blocks, which it is now almost impossible to obtain.

With a view to carrying out the order for a reduction in coal consumption of 15 per cent. the car mileage in Brighton was reduced by 2,389 in twelve days and the B.T. units consumed by 2,110. In spite of that, the number of passengers was up by 20,000 and the receipts by £114. The question of stopping the running of cars on Sundays is receiving consideration, but it is said that such a course would mean a loss of £12,000 a year

No cars were run in Sunderland last Sunday, nor are they to be run on Sundays in the future till conditions change.

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LANCASHIRE & CHESHIRE TRAMWAYS COUNCIL.

At a meeting of representatives of Lancashire and Cheshire tramway authorities, both municipal and company-owned, held on Thursday, May 16, it was decided to form a council for those districts. Practically the whole of the tramway authorities in the two counties have agreed to join, and it is expected that in a short time the whole of them will come into the organisation. The objects for which the Council has been formed are set out in the draft constitution, which is given in full below.

Alderman Linsley (chairman of Salford Corporation Tramways Committee) has been appointed chairman; Mr. Alderman Russell Taylor (chairman of Liverpool Corporation Tramways Committee), vice-chairman; and Mr. J. Barnard (general manager, Bolton Corporation Tramways), hon. secretary; and Mr. Alderman Clark (Rochdale) and Mr. Henry Mozley (Burnley), auditors.

DRAFT CONSTITUTION.

TITLE.

1. The title shall be the Lancashire and Cheshire Tramways Authorities' Council.

OBJECTS.

2. The Council is established for the following objects, viz., (*a*) to promote, further and protect the interests of the Council and of the members generally; to secure mutual support and co-operation in dealing with demands and action taken by workmen, or combinations thereof, on all matters or questions affecting Tramways Authorities, including such questions as rates of pay, hours and conditions of labour, overtime, limitation of work, piece work and demarcation of work. (*b*) To define suitable areas and promote the fixing of uniform conditions of labour, rates of pay, etc., within such areas.

CONSTITUTION.

3. (*a*) This Council shall be an Association or Federation of Tramways Authorities, Municipal and Company owned, in the Counties of Lancashire and Cheshire.

(*b*) The Council shall consist of two representatives elected by each Tramways Authority together with the Tramways Manager of each Authority.

MEMBERSHIP.

4. Application for membership of this Council shall be made by Resolution duly passed by the Tramways Authorities so desiring to join.

MANAGEMENT.

5. (*a*) Each Authority shall be entitled to one vote.

(*b*) The Council shall meet quarterly or oftener if required and 15 shall form a quorum.

(*c*) The last meeting of the financial year of the Council shall be the annual general meeting and shall take place in the month of April, when the Annual Report, Accounts, etc., shall be presented.

ELECTION OF OFFICERS.

6. At the annual meeting in April there shall be elected the following officers, viz.:

A Chairman, Vice-Chairman, Secretary, and two Honorary Auditors who shall hold office for one year. The Chairman, Vice-Chairman and Secretary shall be ex-officio members of all Committees of the Council.

DUTIES OF SECRETARY.

7. A Secretary shall be appointed by the Executive Committee for such period and upon such terms as they may in writing determine. It shall be the duty of the Secretary to act as clerk and treasurer, keep the minutes of all meetings, conduct all correspondence, receive and pay over to the Council's bankers all subscriptions and other moneys, keep proper accounts, prepare and issue any necessary reports and notices and conduct the affairs of the Council under their direction.

MEETINGS.

8. (*a*) The Annual General Meeting of the Council shall be held in the month of April, of which at least seven days' notice shall be given by the Secretary and shall be held at such place as the Council may determine.

(*b*) Special meetings of the Council may be called by the Chairman of the Council at any time and shall be so called by him on the requisition of five Authorities within fourteen days of such requisition. Any requisition must be in writing and state the business proposed to be brought before the meeting.

(*c*) All questions before any meeting of the Council shall be decided by a majority of the votes of those present at such meeting and entitled to vote and the Chairman shall have a casting vote besides his deliberative vote.

FUNDS.

9. (*a*) Each Tramways Authority shall pay an entrance fee of £5 5s. which shall include the first year's subscription. The subscription for the second and subsequent years shall be £2 2s. per annum.

(*b*) Levies may also be made on each Tramway Authority when in the opinion of the Council such levies are required.

REPORTS, NOTICES, ETC.

10. Each Tramways Authority shall forward to the Secretary reports of notices given by employees for increase in wages, alteration of working conditions, etc. In case of a strike or any urgent matter requiring immediate decision notice thereof must be at once forwarded to the Secretary.

INDUSTRIAL COUNCILS, ETC.—DELEGATES' EXPENSES.

11. Any Delegates appointed to represent the Council at any conference or meeting for purposes connected with the affairs of the Tramways Authorities shall have their expenses paid by the Council.

RATES TO PAY LOSSES.

A new Defence of the Realm Regulation published in the *London Gazette* of May 21 confers upon local authorities powers to defray any deficiency on the working of municipal tramways out of rates The Order will override what is known as the "Aberdeen" clause in the Acts under which certain municipal tramways are operated, requiring them to prepare estimates so as to make the receipts balance expenditure. The text of the Order is appended:—

"If in the case of any tramway undertaking carried on under statutory powers by a local authority it appears to the Board of Trade that it is necessary for the successful prosecution of the war that the undertaking should be carried on in an efficient manner, but that owing to circumstances arising out of the war it cannot be so carried on without either charging tolls, fares, and charges in excess of those which the local authority is authorised in any year to charge, or without applying in aid of a deficiency in any year in the revenue of the undertaking local rates or funds which are not applicable to that purpose, the Board of Trade may by order authorise the local authority to charge the local rates or funds with any such deficiency and to defray the deficiency thereout to such extent and subject to such conditions as may be specified in the Order, and may by such Order modify any provision in any local Act regulating the undertaking to such extent and during such period as appears to the Board necessary for the purpose aforesaid, or for the purpose of relieving the local authority from the obligation of making allowances for renewals or depreciation."

CONTROL OF ROAD TRANSPORT.

The Road Transport Board recently set up by the Board of Trade to reorganise and control the road transport of the country has been given compulsory powers under the new Defence of the Realm Regulations. Under the new Order the Board may—

Regulate or restrict the use of horses and vehicles.

Take possession of any horses or vehicles or require them to be placed at the disposal of any specified person.

Prohibit the carriage of any class of goods by road and prescribe the radius or distance within which goods may be carried by road.

Regulate the priority in which goods are to be carried.

Prescribe the conditions of hire of horses or vehicles and also the rates for road transport, and fix the conditions on which goods may be loaded, carried, and discharged.

Compensation for horses or vehicles taken over to be decided, failing an agreement by an arbitrator.

Returns of horses and vehicles are required, and an authorised person may enter any premises for the purpose of inspection and examination to test the accuracy of returns.

Major Belcher, Director of Vegetable Supplies, recently announced that the Board is about to take over the whole of the road transport of the country. The work will be decentralised into a number of divisions or areas corresponding to the areas of the Ministry of Food.

STOPPAGE AT BELFAST AVERTED.

The threatened stoppage of the Belfast tramways service has been averted. At the Munitions Tribunal in Belfast on Saturday, May 18, after a hearing of the action taken on behalf of 800 employees against the Corporation for failing to comply with the terms of the award granting an advance of 8s. weekly, it was announced that the Government had decided to issue an order under the Defence of the Realm Act, suspending the Aberdeen clause. This is the clause in the Act of Parliament under which the Corporation tramways are worked, making it compulsory for the tramway undertaking to pay its way, and preventing the Corporation from making up any deficit from the rates. The solicitor for the Corporation said that as a result of the decision the rate under the award would be paid on the next pay day as from the date on which it was granted. The Corporation had only refused to do this because they could not carry out the award and conform to the Aberdeen clause. The Corporation agreed to give the plaintiffs ten guineas costs.

MISCELLANEOUS NEWS AND NOTES.

Accident at Coventry.—On Saturday, May 18, a Coventry Corporation tramway car left the rails and overturned. Thirteen passengers were injured.

Dunfermline Tramway Extension.—Service on the Rosyth extension of the Dunfermline tramways was begun on May 17, after an inspection by Colonel Pringle, on behalf of the Board of Trade. The new line extends from Dunfermline High Street to Rosyth Dockyard. Completion of the line has been hurried forward in order to provide transit for workers between Rosyth and the southern suburbs of Dunfermline. The route is nearly four miles in length, and the line ends close to the dockyard entrance. Dunfermline and District Tramways Company have now twenty miles of line in the Dunfermline district.

Demand for 12½ per cent. bonus.—The Municipal Tramways Association have sent a communication to the Tramway Committees in regard to the application for an increase of wages, stating that the Executive were not prepared to advise municipalities to accede to the demand of the National Transport Workers' Association for a 12½ per cent. increase upon existing total earnings or to consider the award recently issued in connection with the payment to women both as regards war wages and basic rates. The Executive, however, express their willingness to go to arbitration on the matter.

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Increased Fares in London.—The revised fares on the London County Council tramways came into force on the routes south of the Thames on Saturday, May 18, and conductors had a busy time explaining the changes to a large number of passengers who apparently had not acquainted themselves with the altered tariff. The public generally recognise the necessity for the increase in the fares, but the Mentors of the Press appear to need enlightenment. The *Pall Mall Gazette*, for instance, delivered itself of the following: "Londoners must not imagine that they are helpless in this matter. They must bestir themselves and bring prompt measures to bear on members of the Council. Neglect of electoral power makes these vexatious extortions possible." When such views find expression in a responsible newspaper it is small wonder that the London County Council tramway undertaking has never yet reached a satisfactory financial position. To describe the present attempt to make the enterprise self-supporting as "extortion" is simply nonsense. No more forcible complaint would be made from any other quarter than the *Pall Mall Gazette* if the Highways Committee were to exact a subsidy from the rates; but, to avoid this, greater revenue is necessary.

Whitsuntide Traffic.—Whitsuntide weather favoured the tramways this year, and the traffic almost everywhere showed a marked increase. In Glasgow on the Saturday the receipts totalled £6,500, an unprecedented sum. The next best—£6,307—was taken on a Saturday of last month. In Newcastle, on Whit-Monday, the receipts aggregated £2,000, the largest sum received in a single day in the history of the undertaking. For the three days, Saturday to Monday, the receipts totalled £5,158, which compares with £3,728 last year. On Saturday and Sunday the receipts in Leeds aggregated £2,743, an increase of £253 on the corresponding days of the previous year. On Saturday and Sunday the Manchester tramways receipts reached the highest point yet recorded—£5,208 on Saturday, and £3,642 on Sunday, against £4,215 and £2,068 respectively for the corresponding period of 1917. The receipts of the Salford tramways were much more than those of a year ago—£1,745 on Saturday, against £1,431 and £1,272 for Sunday, against £635, showing increases of £314 and £617. At Halifax the receipts for the three days—Saturday, Sunday, and Monday—were £2,466, an increase of £180; but in Bradford the receipts for the same period were £5,147, a decrease of £139. Oldham Corporation tramways for this week, including the Saturday before Whitsuntide, had a record traffic. The total receipts amounted to £3,739, an increase of £1,134 over the corresponding week of last year.

A Twelve-Hour Strike at Plymouth.—On Saturday morning, May 18, the employees of the Plymouth Corporation tramways ceased work without notice. Large numbers of dockyard men found no cars to convey them to their work, and the public were generally greatly inconvenienced. The whole trouble appears to have arisen out of a quarrel between two labour unions. Mr. C. R. Everson, the general manager of the tramways, on Friday evening received a letter from the members of the tramways branch of the Dockers' Union, notifying him that at a meeting on May 15 the Union had decided that in the event of certain employees refusing to become members of their Union by 6 p.m. on Friday, they would refuse to work with them after midnight on that day. The Town Council had previously passed a resolution that it was not their duty to coerce any man into joining a union. On Saturday afternoon the Tramways Committee met a deputation from the Municipal Employees' Association, to which the few men whom the employees wish to force to join the tramways branch of the Dockers' Union belonged, and told them that there was no objection to the employees resuming work unconditionally. The Committee arranged to meet a deputation on Wednesday to consider any grievances. About 6 p.m. work was resumed, the men having been on strike for about twelve hours. The employees of the Plymouth, Stonehouse, and Devonport Tramways Company came out in sympathy with their disaffected co-unionists, and altogether about four hundred men were affected.

PERSONAL.

Mr. J. S. Huddleston has resigned his position with Messrs. Siemens and Company, and has been appointed general manager to the Union Cable Company, Ltd.

Mr. R. B. Donal has been appointed borough engineer and surveyor of Wigan, having resigned his position as chief engineering assistant to the Huddersfield Corporation.

Mr. S. S. Platt, who has been borough surveyor of Rochdale for thirty-seven years, has resigned owing to ill-health. His resignation will take effect on October 3.

Messrs. Hays, Hunter & Standen, Ltd., have removed to 71, Southwark Street, London, S.E.1. Telephone numbers, Hop 2746, 2747 and 4321. Telegrams, Bimarginal, Borch, London.

Second-Lieut. William McCallum, R.E., has been awarded the Military Cross. Previous to joining the forces, Lieut. McCallum was a member of the engineering staff of Messrs. Dick, Kerr and Company. He is a B.Sc. of London University where he graduated with honours in the Faculty of Engineering.

Major Angus Macpherson, Machine Gun Corps, who before the war was in the employment of the Glasgow Corporation tramway department, has been awarded the Military Cross. He is a native of Carradale, Argyllshire, and went to France as a private in the original Expeditionary Force. He had already won the D.C.M., had been wounded three times and mentioned in despatches four times.

Mr. A. Baxendale has been appointed car shed superintendent of the Rawtenstall Corporation tramways.

Captain R. B. Wilmshurst, the youngest son of Mr. T. P. Wilmshurst, borough electrical engineer of Derby, has been awarded the Military Cross for gallantry in the recent fighting. Captain Wilmshurst, who is 21, was wounded at Bailleul on April 15. His eldest brother, Lieutenant A. P. Wilmshurst, is serving in Mesopotamia, and his second brother, Captain E. R. V. Wilmshurst, died in hospital at Rouen in 1916 from wounds received in the Somme battle.

The death is announced of **Mr. Charles C. Howard,** who was general manager of Bolton Corporation tramways until 1910, when he retired.

FINANCIAL REPORTS AND MEETINGS.

Brisbane Electric Tramways Investment Co., Ltd.—A dividend has been declared of 4s. per share, free of tax, on the ordinary shares, making 8 per cent. for the year.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended May 22 amounted to £72,085, an increase of £17,049 as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to May 22 (seven and a half weeks), the total receipts were £439,801, an increase of £47,575 on the corresponding period of 1917.

Shanghai Electric Construction Co., Ltd.—The report of the Shanghai Electric Construction Company for 1917 states that profit amounted to £67,504, against £48,123. Including £2,510 brought forward, the credit before making appropriations was £70,014. There have been transferred to reserve for renewals £10,000 and to the preliminary expenses account £5,000. The directors recommend a final dividend of 5 per cent. (less tax), making 10 per cent. for the year, and a bonus of 2½ per cent. (free of tax), leaving to be carried forward, subject to excess profits duty, £15,014. The loss by exchange on subsidiary coinage in 1917 was £35,478, equal to 11·09 per cent. on the capital. The ratio of depreciation to gross takings was sensibly lower than for several years past. Traffics and net receipts for the current year continue to be satisfactory. An arrangement was made with the Municipal Council to commute the company's liability for road maintenance by payment of an annual sum.

CONTRACTS AND ORDERS.

Stratford-on-Avon Town Council has decided to purchase a motor fire engine.

Derbyshire County Council propose to purchase two steam wagons, at a cost of about £2,000.

Chloride Electrical Storage Company are to maintain an electric vehicle battery for Bradford Electricity Committee.

Yorkshire Commercial Motor Company have received an order for a steam wagon at £1,034 from Walsall Town Council.

The British Thomson-Houston Company's tender for a rotary converter at £4,884, has been accepted by Cardiff Corporation.

Bolton Corporation have accepted the following tenders:—Morgan Crucible Company, carbon brushes; Universal Wheel Grinding Company, emery wheels; British Insulated and Helsby Cables, cables and insulating wire; General Electric Company, jointing material, tape and solution; Credenda Conduits Company, steel conduits and fittings.

The British Niclausse Boiler Co., Ltd., owing to its offices at Caxton House having been taken over by the Government, has taken new offices at Clock House, Arundel Street, London, W.C.2.

A New Macintosh Depot.—We are asked by Messrs. Charles Macintosh & Co., Ltd., to announce the establishment of a depot for Macintosh band tires at 9, Colston Avenue, Bristol. No doubt the users of this well-known brand of tires who are located in the West of England will much appreciate the extra facilities offered by this latest opening—not less useful will it be to prospective purchasers.

DICK, KERR & Co.,
Limited,
ABCHURCH YARD, CANNON STREET, LONDON, E.C.,
ENGINEERS & CONTRACTORS.
Complete Equipment
TRAMWAYS & LIGHT RAILWAYS
at home and abroad

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash May 23 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	67	66½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4½	57/6	57/6
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4½	48/9	48/9
4%	4%	Do. 4% Deb.	100	91	71	69½
4½%	4½%	Do. 4½% Deb.	100	98½	68	68
5%	5%	Do. 5% Deb.	100	96	64½	64½
—	—	Associated Omnibus Co., Ord. ..	5/-		1/2	1/2
1/-	6d.	Auckland Elec. Trams. Ord. ..	1	1 3/32	20/4½	20/4½
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	110	108½
—	1/-	Bath Electric Trams Pref. Ord.	1	¼	3/6	3/6
6d.	6d.	Do. 5% Cum. Pref. ..	1	1/16	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	77½	77½
20/-*	20/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Do. 6% Cum. Pref. ..	10	11½	9 9/16	9 9/16
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	43½	42½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	86½	86½
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5½	5½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/-	80/-
4½%	4½%	Do. 4½% 1st Deb.	100	101½	91	91
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	33½	33
6%	5%	Do. Pref. Ord.	100	106	42	41
5%	5%	Do. 5% Cum. Pref. ..	100	103	60½	60
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	83½	83½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	63½	63½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	31½	31½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	74	74
5%	5%	Do. 5% Deb.	100	92	77½	77½
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	63½	63½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	77½	77½
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6½	6½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	81/3	81/3
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1	1 1/16	12/9	13/-
1/3	1/3	City of B. A. Trams	5	5½	79/4½	79/4½
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	82	82
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	59½	59½
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 3/32	7 3/32
6/-	6/-	Do. 6% Pref.	10	12	10	10½
—	—	Hastings & Dis. Elec. Tram Ord.	10/-		1/3	1/3
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1	1/16	10/1½	10/3
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
8½d.	8½d.	Hong Kong Tramway	5/-	1/16	17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	80	80
2/6	2/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	½	2/4½	2/4½
9/6	9/6	Lanarkshire Trams Co. ..	10	10½	10	10 1/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	79½	79½
9½d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	1 3/32	2/4½	2/4½
6d.	6d.	Do. 5% Pref.	1	1/16	6/3	6/2
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	60	60
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	80½	80½
5%	5%	Do. 5% Inc. Deb.	100	88½	76	76
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	38½	38½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	82/6	82/6
5%	5%	Do. 5% Deb.	100	100	84½	84½
7½d.%*	9½d.*	Manaos Trams & Ltg. Ord. ..	1	9/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	68	68
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	74½	73½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	69	69
5%	5%	Do. 5% Deb.	100	87	76½	76½
$1½	$1½	Mexico Trams. Common ..	$100	70	24	24
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	36½	36½
—	—	Do. 6% Mt. Bds. ..	100	76	30	29
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	93½	93½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	91	92½
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	1/32	17/6	18/3
9½d.*	9½d.*	New General Traction	1	½	7/1½	7/1½
6d.	8½d.	Northern Gen. Trans. Ord. ..	1	3/32	12/9½	12/9½
2/-	4/-	Para Elec. Rlys. Ord.	5	4½	78/9	78/9
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	7/9	7/-
—	—	Do. 7% Non. Cm. Part Pf.	1	—	13/10	13/6
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1	1/32	6/10½	6/6
6d.	6d.	Do. 5% Pref.	1	1/32	12/6	12/6
8d.	1/4	Provincial Trams. Ord. ..	1	¼	18/-	18/-
2/-	2/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	87½	87½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	73	72½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	85½	84½
5%	5%	Do. 5% Perp. Deb. ..	100	90½	70	69½
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	½	4/6½	4/6½
4%	4%	Sou. Met. Elec. Trams & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	94	94
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	78	78
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	35/-	35/-
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	57	57
—	—	Yorks (W.R.) Elec. Trams. Ord	5	¼	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	¼	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	72½	72
—	—	Metropolitan Dist. Ord. ..	100	21½	14½	14½
—	—	Undgd. Elec. Rys. of London ..	10	21½	33/9	33/9
		Do. "A"	1/-	½	5/-	4/9
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	104½	105
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	99	98½
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	77½	77

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

Names.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1913	Incr. or Dec.
Aberdare U.D.C. ..	Apr. 30	386	473	+ 87	4	2,157	+ 352
Aberdeen Corporation ..	May 15	1,856	2,282	+ 426	50	109,257	+ 15,135
Ayr Corporation ..	,, 18	346	479	+ 132	¾	246	+ 25
Belfast City	,, 17	5,857	7,714	+ 1,857	7	53,434	+ 13,097
Birkenhead Corporation	,, 19	1,692	2,186	+ 494	7	14,232	+ 2,657
Blackburn	,, 8	1,374	1,672	+ 298	7	10,668	+ 2,152
Bradford Corporation ..	,, 11	7,285	7,461	+ 176	6	44,953	+ 3,002
Burnley Corporation ..	,, 18	1,737	2,070	+ 333	..	..	..
Burton-on-Trent Cor. ..	,, 19	278	418	+ 140	7	2,711	+ 831
Bury Corporation ..	,, 21	1,487	2,067	+ 580	7	12,653	+ 1,765
Chatham & District ..	,, 16	1,380	1,301	— 79	20	22,872	+ 439
Cork Electric	,, 2	585	591	+ 6	18	10,201	+ 1,960
Derby Corporation ..	,, 18	1,119	1,564	+ 445	7	9,884	+ 2,309
Dundee City	,, 15	1,391	1,634	+ 243	52½	82,139	+ 10,280
East Ham Corporation ..	,, 18	1,966	1,447	— 519	6½	9,210	— 365
Exeter Corporation ..	Mar. 22	302	373	+ 71	51	20,106	+ 301
Glasgow Corporation ..	May 18	25,573	29,508	+ 3,935	503	1,349,081	+ 153,904
Glossop (U.E. Sup. Co.) ..	,, 18	150	181	+ 31	20	3,573	+ 970
Halifax Corporation ..	,, 14	2,299	2,572	+ 273	6½	15,863	+ 1,972
do. Motor Buses ..	,, 14	38	58	+ 20	6½	353	+ 77
Huddersfield Corporation	,, 18	2,983	3,544	+ 561	7	24,578	+ 2,972
Ilford U.D. Council ..	,, 18	884	989	+ 105	7	6,388	+ 1,584
Ipswich Corporation ..	,, 18	658	752	+ 94	7	4,622	+ 1,233
Isle of Thanet ..	,, 18	281	263	— 18	33	6,114	— 2,251
Kilmarnock Corporation	,, 18	106	129	+ 23	¾	129	+ 23
Lanarkshire	,, 16	2,850	3,659	+ 809	20	64,604	+ 15,595
Lancashire United ..	,, 15	2,186	2,760	+ 574	20	51,685	+ 14,947
Leeds City	,, 18	10,484	11,566	+ 1,082	7	78,911	+ 9,679
Leicester Corporation ..	,, 18	3,575	4,688	+ 1,113	..	..	..
Leyton U.D. Council ..	,, 16	2,318	2,097	— 221	7	13,578	+ 818
Liverpool Corporation ..	,, 11	15,388	18,422	+ 3,034	183	316,322	+ 49,171
Llandudno & Colwyn Bay	,, 3	250	338	+ 88	22	5,978	+ 1,562
London County Council ..	,, 22	55,036	72,085	+ 17,049	7½	439,801	+ 47,575
Maidstone Corporation ..	,, 16	218	251	+ 33	6½	1,870	+ 357
Manchester Corporation	,, 18	20,429	25,248	+ 4,819	7	168,488	+ 35,889
Newcastle-on-Tyne Cor.	,, 18	7,671	9,211	+ 1,540	7	60,623	+ 11,786
New St. Helens & Dist. ..	,, 15	1,185	1,549	+ 364	46	64,598	+ 15,108
Northampton Cor. ..	,, 17	823	886	+ 63	7	6,003	+ 920
Nottingham Corporation	,, 16	4,238	5,776	+ 1,538	7	35,827	+ 9,295
Oldham Corporation ..	,, 19	2,615	3,740	+ 1,135	8	26,110	+ 5,015
Reading Corporation ..	,, 9	949	1,234	+ 285	6	6,656	..
Rhondda Tramways ..	,, 9	1,485	1,763	+ 278	19	30,392	+ 5,319
Rotherham Corporation	,, 22	1,666	2,411	+ 745	7½	15,782	+ 3,111
Sheffield Corporation ..	,, 19	11,292	13,806	+ 2,514	7½	104,387	+ 15,711
Southampton Cor. ..	,, 15	1,855	2,446	+ 590	6½	15,575	+ 4,112
Southend-on-Sea Cor. ..	,, 15	826	873	+ 47	7	4,984	— 2
South Shields Cor. ..	,, 4	862	1,015	+ 153	5	5,184	+ 1,108
Sunderland Corporation.	,, 19	1,707	2,021	+ 314	7	14,417	+ 2,909
Sunderland District ..	,, 8	669	870	+ 201	27	23,094	+ 6,045
Swindon Corporation	,, 8	262	324	+ 62	53	1,634	+ 310
Torquay Tramways	,, 9	557	780	+ 222	19	13,296	+ 4,275
Tyneside Trys. & Trmrds	,, 1	761	994	+ 233	18	15,216	+ 4,037
Wallasey Corporation	,, 18	1,370	1,721	+ 351	6½	11,422	+ 2,140
Walsall Corporation ..	,, 11	885	1,194	+ 209	6	6,945	+ 1,649
Walthamstow U.D. Coun.	,, 18	1,352	1,506	+ 154	7	9,049	+ 1,198
Warrington Corporation	Apr. 18	475	719	+ 244	3	1,863	+ 618
West Ham Corporation	May 16	4,511	4,235	— 276	6½	26,274	+ 2,287
Wigan Corporation ..	,, 16	1,862	2,371	+ 509	7	15,609	+ 3,690
Yorkshire (West Riding)	,, 19	1,902	3,007	+ 1,105	20	48,863	+ 11,359

TRAFFIC RETURNS SUSPENDED.

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Birmingham, Blackpool, Blackpool and Fleetwood, Bolton, Bournemouth, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Dublin United, Glasgow Subway Co., Hastings, Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Nelson, Newport (Mon.), Portsmouth, Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

Name.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	May 20	£52,654	£54,104	20	£1,107,440	+ £78,045
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Feb. 24	3,196	3,902	48	40,644	+ 1,316
Brazilian Traction (Mlrs.)	Mar.	7,549,000	8,094,000	13	23,246,000	+ 1,559,000
Brisbane	Apr.	31,620	35,530	17	137,569	+ 9,789
British Columbia .. $	Mar.	456,626	510,892	39	4,495,271	+ 428,266
Buenos Aires Lacroze ..	Apr.	39,111	41,643	43	388,064	+ 2,601
Burmah Tram. & Light Rs.	Apr.	23,660	27,614	39	239,756	+ 4,945
Calcutta .. .. Rs.	May 18	65,431	72,691	20	1,427,444	+ 95,287
Cape Town	Apr.	16,705	19,011	..	..	..
Carthagena and Herrerias	Apr.	4,366	4,200	17	17,558	+ 3,032
Cordoba	Feb.	11,896	12,972	47	147,938	+ 435
East India	Apr.	1,445	1,791	39	12,287	— 5,398
Hong Kong .. .. $	Mar. 16	12,121	12,349	11	153,745	+ 2,605
Kalgoorlie	Jan.	2,431	2,522	4	2,522	+ 91
La Plata	Apr.	4,230	5,169	17	19,972	+ 2,807
Lima	Mar.	37,586	42,106	13	127,555	+ 18,900
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	May 15	34,235	42,003	19	362,737	+ 52,350
Manaos .. .. Rs.	Feb.	144,532	133,591	8	285,462	+ 5,563
Manila (8 weeks) .. $	Feb. 23	73,200	93,000	8	93,000	+ 19,800
Montevideo	Apr.	29,230	33,704	22	206,037	+ 19,415
Pernambuco	May 19	3,580	4,322	24	91,39.	+ 19,485
Peruvian .. .. $	Apr.	957,500	1,079,880	43	10,402,440	+ 1,142,548
Port Elizabeth	Apr.	3,904	4,028	..	..	..
Rangoon	Apr.	5,036	5,885	17	22,863	+ 2,863
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Apr. 6	14,148	13,751	14	187,999	+ 1,742
Toronto .. .. $	Mar.	991,192	1,113,472	13	3,163,724	+ 237,496
Winnipeg .. .. $	Mar.	293,094	307,289	13	940,830	+ 47,074

Wanted.—Copies of the Tramway and Railway World, Volume XXXIX, No. 1 (January 1, 1916), to complete files for binding.—Reply to Box, 24, The Tramway and Railway World, Amberley House, Norfolk Street, London, W.C.2.

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THE

Tramway & Railway World

Vol. XLIII. No. 27] LONDON, SATURDAY, JUNE 1, 1918. [Established in 1892.

ANNUAL SUBSCRIPTION (Postage Prepaid)—in the United Kingdom, 25s.; for all places abroad, 30s.

Including sixty-four issues, of which twelve are large illustrated numbers, printed on fine art paper

NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."
Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

COUNTY BOROUGH OF WARRINGTON.

Electricity Department.

The Electricity and Tramways Committee of the County Borough of Warrington invite Tenders for the following:—

High Tension Lead Covered Cable and Medium Tension Rubber Covered Cable.

Specification and Form of Tender can be obtained fom the undersigned on payment of one guinea, which will be returned on receipt of a bona fide tender.

Five shillings will be charged for extra copies of the specification.

Tenders, addressed to the Chairman of the Electricity and Tramways Committee, Town Hall, Warrington, must be sealed with wax and endorsed "Tender for Cable." and delivered not later than 12 o'clock noon on Tuesday, June 18, 1918.

The lowest or any tender will not neeessarily be accepted.

F. V. L. MATHIAS, M.I.E.E.
Borough Electrical and Tramways Engineer.

Howley, Warrington.

POSITIONS VACANT.

BOROUGH OF KEIGHLEY.

Electricity and Tramways Departments.

Appointment of Assistant to the Borough Electrical Engineer and Tramways Manager.

Wanted, a thoroughly capable Assistant for carrying out instructions in connection with both the Electricity and Tramways Departments.

He should be capable of controlling men, and have a good mechanical and electrical knowledge.

Preference will be given to those also having Tramway experience and the supervision of Mains work.

Salary £200 per annum, inclusive of all War bonuses and advances.

Application, in writing (from ineligible or low category men), for the above appointment, should be received not later than Monday, June 17, stating age, training, experience, and medical category, together with copies of three recent testimonials, to the undersigned.

HARRY WEBBER,
Borough Electrical Engineer and Tramways Manager.

Electricity Works,
Coney Lane, Keighley.

ARMATURE WINDER, &c.

Armature Winder and general Car Wireman required for the Rawtenstall Tramways Department.—Apply, stating wages required, to the undersigned not later than Tuesday next, the 4th June, 1918.

C. L. E. STEWART, A.M.I.E.E.,
Borough Electrical and Tramways Engineer.

Bacup Road, Rawtenstall,
May 27th, 1918.

BURGH OF KILMARNOCK.

Electricity and Tramways Department (Protected).

Wanted—

(1) Test-room Assistant, experienced in testing and calibrating of A.C. and D.C. meters. Wages 50s. per week of 46½ hours.

(2) Overhead Linesman, experienced in the erection of extra high-tension transmission lines and repairs to tramways overhead construction. Wages, including bonus, 55s. 4d. per week of 54 hours.

(3) Skilled Fitter to act as foreman, accustomed to general repairs in electricity and tramways undertakings. Good wages to suitable applicant. House accommodation provided.

The above positions are of a permanent nature. Applications, stating age, together with details of experience and copies of recent testimonials, must be lodged with the undersigned not later than June 7th.

WILLIAM C. BEXON,
Engineer and Manager.

Electricity and Tramways Department,
Kilmarnock.

COUNTY BOROUGH OF BOLTON.

Electricity Department.

Wanted, two Junior Engineers-in-Charge, with E.H.T. and D.C. experience. Wages £2 per 56-hour week, plus £1 and 12½ per cent. War Bonus.

Applications, stating age, qualifications and experience, and whether eligible for military service, to be sent to the Borough Electrical Engineer, Back-o'-th'-Bank, Bolton.

SAMUEL PARKER,
Town Clerk.

Town Hall, Bolton.
May 25th, 1918.

CAR SHED FOREMAN.

Applications are invited for the position of Car Shed Foreman. Applicants to have had all-round experience in the various trades concerned.—Apply, stating age, experience, salary required, with copies of testimonials, to GENERAL MANAGER, Corporation Tramways, Exeter.

FOR SALE.

HULL CORPORATION ELECTRICITY DEPARTMENT.

Generating Sets for Sale.

The Hull Corporation Electricity Department invite offers for the following plant which has fallen into disuse through the installation of larger units at their Sculcoates Lane Works, viz:—

Two High-tension Direct Current Generators (2,250 volts, 90 amps., 350 R.P.M.) direct-coupled to Willans and Robinson tandem, three-crank compound engines, together with ejector condensers, connecting pipes and valves; also one spare armature for above.

One Direct Current Generator (460 volts, 390 amps., 350 R.P.M.) direct coupled to Allen vertical compound engine, together with ejector condenser, connecting pipes and valves.

The above plant, which is in first-class condition, can be inspected at any time by appointment, and any further particulars may be obtained from the undersigned.

Tender, endorsed "Sale of Plant" to be sent, under seal, and addressed to the Chairman of the Electricity Committee, Guildhall, Hull, by not later than noon on Thursday, June 20, 1918.

The highest or any tender not necessarily accepted.

J. F. MAGORIS,
Acting City Electrical Engineer.

Electricity Works, Sculcoates Lane, Hull,
May 27, 1918.

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OF EVERY DESCRIPTION.

SAND OR DIE—2 h.p. to 600 h.p.

ROBERT W. COAN,

Telegrams: KRANKASES, ISLING, LONDON. | 219, GOSWELL RD., LONDON, E.C. | Telephones: 3646 CITY. 4879 CENTRAL.

TRAMWAY SUPPLIES, Ltd.

Tramway Engineers,

OVERHEAD LINE MATERIALS AND SUPPLIES.

Sole Manufacturers of

TURNER'S PATENT AUTOMATIC POINT CONTROLLERS.

Telegrams: "Controllers, Leeds." Telephone: 26883 Leeds. | 160, WOODHOUSE LANE, LEEDS.

1837. 1918.

·5 sq. in. single Vulcanised Bitumen Insulated Cable.

HENLEY

CABLES

are up-to-date in method, material and manufacture. To ask us to quote you, places you under no obligation and may prove to your advantage.

W. T. HENLEY'S TELEGRAPH WORKS COMPANY, LIMITED, Blomfield Street, LONDON, E.C.

ROLLING STOCK SPECIALITIES.

OUR RATTAN

(NATURAL, GLAZE, DULL FINISH, OR COLOURED) in twill, straight, or fancy weaves, canvas backed or unbacked, is

BRITISH MADE THROUGHOUT

from the splitting of the cane to the finished article.

We hold **LARGE STOCKS OF RAW MATERIALS** and can GUARANTEE PROMPT DELIVERIES.

Particulars of other **BRITISH SPECIALITIES** *upon application.*

THE GENERAL SEATING COMPANY, LTD.

13, CITY ROAD, LONDON, E.C.

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THE
Tramway AND Railway World

Established in 1892 and Published by

THE TRAMWAY & RAILWAY WORLD PUBLISHING CO., Ltd.
AMBERLEY HOUSE, NORFOLK STREET, LONDON, W.C.

Sixty-four issues are published annually, including twelve large numbers which are fully illustrated and printed on art paper.

SUBSCRIPTION.

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FOR THE UNITED KINGDOM—Twenty-five Shillings per annum including 64 issues, of which 12 are illustrated numbers. One Shilling per Single Copy.

FOR ALL PLACES ABROAD—Thirty Shillings per annum.

SATURDAY, JUNE 1, 1918.

ELECTRIC POWER SUPPLY.

The report of the Electric Power Supply Committee appointed by the Board of Trade has now been issued, and the important proposals which they make are given in another column. In view of the urgency of the matter the Committee advise immediate legislation; and considering the position that will exist after the war it is clear that there ought to be no delay in dealing with the matter. Delayed extensions of generating plant and mains throughout the country will urgently require attention, and an accumulation of business will call for much new work; and unless on the termination of the war there is a new organisation ready and prepared to develop on right lines an opportunity will be lost which will never recur, and the present disadvantageous conditions will be perpetuated. The report of the Coal Conservation Sub-Committee advised the setting up of a national scheme of electric supply. The report of the present Committee carries the proposals further, and emphasises the immense importance of the cheap and plentiful supply of electricity over the widest areas possible. They suggest that a new authority should be set up, to be known as the Electricity Commissioners who should be appointed by the President of the Board of Trade, be in direct communication with him, and through him responsible to Parliament. These Commissioners would be endowed with very full powers, which would include the encouragement of the supply and distribution of electricity. The Commissioners would be men of standing and ability, and in the first instance would be five in number. Engineering qualifications and business experience of the highest order would be represented in the personnel of the commission. The Committee have come to the conclusion that in the national interest the generating stations and main transmission lines ought as a general rule to be publicly owned. The country would be divided into a number of districts, in most cases large. District electricity boards would be established to acquire all generating stations and main transmission systems within their districts, excepting stations for private supply, to link up and develop electricity supply, erect new stations where necessary, and to utilise wherever practicable waste gas and other sources of power. The committee think it advisable that the district electricity boards should have power to acquire generating plants of magnitude at present owned by railways, tramways, and other public utility concerns, and that the supply of these undertakings should be combined with that of other consumers of power. Although main-line electrification may not take place immediately, the committee believe that it will undoubtedly come; meantime large extensions of the use of electric power for railways in connection with urban, suburban, and for goods traffic are imminent. The importance of confining the supply to railways, tramways and other consumers, is considered to be beyond doubt, and the committee believes that each of them will benefit thereby. Taken in conjunction with previous reports the case presented by the Electric Power Supply Committee is, from a national point of view, very strong, and while it may not meet with the approval of all existing individual intersts it is to be hoped that it will receive prompt consideration of Government. If the country is to meet its obligations after the war, and higher wages are to be paid, it is essential that the whole problem of electric power supply should be dealt with in the broadest spirit and with a view only to the best interests of the people as a whole.

FUTURE OF EDINBURGH TRAMWAYS.

CRITICISM OF CONDITIONS UNDER MUNICIPAL MANAGEMENT.

A communication signed "J. M." was published in the Edinburgh *Evening News* recently with reference to the conditions under which the Town Council proposes to appoint a tramway manager. Applications for this position, at a salary of £1,000 per annum were advertised for in our issues of May 18 and 25. "J. M.," after perusing the list of duties of the manager, says that the management of the concern is to be in the following officials' hands :—Accounting and finance, City Chamberlain; civil engineering and construction work, Civil Engineer; street paving, City Road Surveyor; erection, maintenance and repair of buildings, City Superintendent of Works. "The tramways manager," remarks "J. M.," "will take what is left; that is to say, the new manager will be supposed to manage the undertaking, but the above officials are, of course, entirely without his jurisdiction." Tramway management, "J. M." adds, in every successful undertaking in this or any other country is never placed in such a position.

INCREASED TRAMWAY FARES.

The Potteries Electric Traction Company, Ltd., on June 1 will add a halfpenny to all ordinary fares up to and including 2d., and above that value the addition will be 1d. Workmen's and scholars' weekly tickets will be issued as before on the basis of half the ordinary fares. Through tickets over more than one route will be discontinued. The company state that prevailing conditions and large increases in the cost of labour and material have necessitated these increases.

The Leeds Tramways Committee have recommended the Council to make some changes in the new scheme of fares recently adopted, and that all halfpenny fares be abolished. Certain halfpenny fares had previously been withdrawn, and it was found that this caused serious difficulty in regard to arranging the tickets. The old penny fare stages are to remain in operation throughout the line at three-halfpence.

The York Tramways Committee have instructed the town clerk to write to the Board of Trade and take other steps to press for the introduction of legislation authorising the raising of the statutory maximum fares.

Darlington Electricity and Light Railway Committee have decided to recommend the abolition of halfpenny fares. Hitherto halfpenny fares have not been available on Saturdays.

Increased fares at Bradford came into operation on June 1. The increase amounts to 50 per cent., and the minimum fare to be paid by any passenger is not less than one penny.

Kilmarnock Town Council have also abolished halfpenny fares.

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ELECTRIC POWER SUPPLY.

RECOMMENDATIONS FOR NATIONAL CONTROL.

The report of the Committee appointed by the Board of Trade early in 1917, to consider the question of electric power supply for all purposes was issued on Wednesday as a White Paper (Cd. 9062), The Committee has considered the terms of reference from a national point of view in order that its recommendations might lead to a practical scheme for providing cheap power throughout the country, In view of the urgency of the matter, they advise immediate legislation on the lines of their recommendations, of which the following is a brief summary :—

(*a*) That a new body, to be called the Electricity Commissioners, should be set up, to whom should be transferred the existing powers of the Board of Trade, Local Government Board, Local Government Board for Ireland, and Scottish Office, relating to the supply of electricity, and to whom large additional powers should be given for regulating and encouraging the generation and distribution of electricity.

(*b*) That the Electricity Commissioners should, subject to an appeal in Parliament in certain cases, have general control over the generation and distribution of electricity in the United Kingdom.

(*c*) That the existing system under which electricity is separately generated for small areas should be abolished.

(*d*) That the Electricity Commissioners should, after local inquiries, divide the United Kingdom into districts technically suitable for the economical generation and distribution of electricity.

(*e*) That in each electrical district a District Electricity Board should be set up which should purchase all generating stations of authorised distributors, whether local authorities, companies or power companies.

(*f*) That the District Electricity Board should be responsible, by themselves or their lessees, for the future generation of electricity in their district and for the establishment of new generating stations and proper systems for the main transmission of electricity in their district

(*g*) That existing electrical undertakers should, if they so desire, retain their power of distributing electricity within their local areas, but should purchase electricity in bulk from the District Electricity Boards or their lessees, due provisions being made for controlling the profits of distributors, so as to ensure a cheap supply of electricity to consumers.

(*h*) That District Electricity Boards should make no divisible profits.

(*i*) That District Electricity Boards should be financed, in whole or in part, by funds raised with Government assistance, except where it is shown to be desirable and practicable to finance the Boards locally.

(*j*) That largely extended powers should be granted for, *inter alia;* (a) The use of overhead wires; (b) wayleaves; (c) acquisition of water rights.

The District Boards would (a) acquire all the generating stations and main transmission systems within their districts (excepting stations for private supply); (b) link up and develop the supply of electricity; (c) erect new stations as and where necessary; (d) acquire and utilise wherever practicable surplus electricity and waste gas and heat and other sources of power.

The report is signed by the Chairman (Sir Archibald Williamson) and all the other members, who were as follows :—

Mr. Harry Booth, O.B.E., Mr. J. F. Crowley, D.Sc., Mr. James Devonshire, Mr. Harold Dickinson, Mr. James Falconer, M.P., Mr. G. H. Hume, Mr. John Kemp, Mr. E. F. Vesey-Knox, K.C., Mr. H. H. Law, C.B., Mr. C. H. Merz, The Hon Sir Charles Parsons, K.C.B., F.R.S., Mr. William B. Smith, O.B.E., Sir John Snell, Alderman C. F. Spencer, and Mr. A. J. Walter, K.C. Mr. M. J. Collins has acted as secretary to the committee.

REDUCTION IN CAR SERVICES.

This week the service on the Cardiff Corporation tramways has been further curtailed. Over the outlying sections of the system the cars are run less frequently, and on the Roath side they run only to the Penylan Road terminus. Most of the Cathedral Road cars stop at Wood Street instead of continuing to Clarence Road. With certain exceptions, the last cars leave the town centres at 10 o'clock instead of 11 p.m. The object of the changes is to run more cars for short distances in order to cope with the traffic from the centre of the city. The main cause of the difficulty is that there are only 75 cars in service as compared with 120 in pre-war days. The decrease is due to the difficulty of securing drivers and spare parts for maintenance. The traffic returns show that a larger number of passengers are being carried than before, in spite of the reduction in the number of cars.

The general manager of the Southampton Corporation tramways has advised a restricted Sunday service in order to comply with the Board of Trade requirements for a reduction in the consumption of coal. The total abolition of the Sunday service will probably take place after September. Alderman F. A. Dunsford, chairman of the Tramways Committee, recently stated that the revision of fares has become a pressing necessity. Although there has been an increase of more than £28,000 in the receipts above the previous year, the Committee is faced with greatly increased expenditure not only for electrical energy but for labour and materials.

Walthamstow District Council have asked their Light Railway Committee to consider the question of stopping the tramway service earlier in the evening, as few people are said to be using the late cars.

Sunday cars have been discontinued at Preston and Swindon.

TRAMWAY AND VEHICLE WORKERS' CONFERENCE.

A conference of the Amalgamated Association of Tramway and Vehicle Workers was held in Birmingham on May 28. The Lord Mayor (Alderman A. D. Brooks) extended a civic welcome to the delegates. Speaking of the national importance of the industry in which they were engaged, Alderman Brooks said that the provision of a well-managed and conducted tramway service was an important factor in the development and extension of communal life. He was one of those who believed that municipal tram undertakings should be carried on on commercial lines, and that means should be adopted to provide a full and adequate return for labour, for enterprise, and for capital, as well as to afford facilities for the public.

We were living under abnormal conditions, and could not obtain quite a fair view of what was likely to be the position in days to come; but one thing, he believed, was certain—namely, that the standard of life would be higher, that men of all classes would have to pay more for the necessaries of life, and in doing so we could only look, and ought to look, for wages to go up in proportion. He had had some experience with regard to labour problems and difficulties, and he was glad to say he had found that in almost every instance differences could be adjusted if the parties would come together in a reasonable spirit. Personally, he believed that a great advantage was to be derived from combination, both on the part of employers and workmen, and as time went on there would be an increased tendency for these combinations to be set up.

EXTENSION OF THE 12½ PER CENT. BONUS DEMANDED.

In a presidential address dealing with the work of the past year, Mr. E. H. Bawden said he questioned if there had ever been a period in the history of the association when so much had been accomplished. Matters of vital interest to the whole of the members had not only been initiated but carried through to their logical conclusion. Referring to the affiliation with the National Transport Workers' Federation, Mr. Bawden said the society by that act had attained a position of power and influence second to none in the country. As the result of the war they would be faced by problems in the future greater than those which faced them to-day. The step which had been taken was necessary if they were to maintain, after the war, when the supply of labour was greater, the position which had now been reached. He mentioned that they had applications pending for the extensions of the 12½ per cent. to all tramway workers and for bringing up the rates paid to the women employees to a standard equal to that of the men. It had been promised that the women should have the same wages and conditions, and they would not be satisfied until that promise was fulfilled. An application was also pending for the extension of the 12½ per cent. to the carters. He believed all these would be agreed to. On the subject of industrial councils the speaker pointed out that they would not serve with the Municipal Employes' Association, because it was felt that as they accepted employes eligible for the membership of their societies it was an unnecessary addition to trades.

THE QUESTION OF NON-UNIONISTS.

The question of non-unionists was raised by Mr. Walters (London), who asked that permission should be given by the executive for branches to go forward with the matter.

The PRESIDENT pointed out the advisability, as far as London was concerned, of dealing with the whole area instead of sectionally.

The Assistant Secretary said the executive and headquarters were in sympathy with the effort to eliminate non-unionists, but it was probable that would be secured by the formation of industrial councils without their having any friction with any particular management. It would then have to be a condition of employment that employes must automatically become members of their trade union.

Mr. MCLEAN (Rochdale) urged that the industrial councils would take some time to establish, and in any national action there would be nothing which would hamper their work so much as this question.

It was also pointed out that in some places there were no non-unionists at all. At Burnley, it was stated, no member of the association would teach the duties of a driver or a conductor to any person who was not a member of the branch.

BRITISH ENGINEERING STANDARDS ASSOCIATION.

The Engineering Standard Committee, which was formed in 1901 by the leading Engineering Institutions, has now become incorporated under the Companies Acts, 1906-1917, the word "Limited", being omitted by licence of the Board of Trade. The Committee, therefore, becomes now a corporate body with a legal entity, and is thus enabled to maintain its position in regard to its brand, which has been largely used in a number of the British standard specifications. The wider use of the brand by manufacturers generally who are working to the British standards should be of material advantage to the British Engineering Industry throughout the world. The good work that the committee has done during the past 17 years, which is such a monument to its founder, the late Sir John Wolfe Barry, K.C.B., F.R.S., and its acknowledged position in the engineering world, makes its incorporation a logical sequence in its development.

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MISCELLANEOUS NEWS AND NOTES.

Moonlight Chart.—Messrs. C. A. Vandervell and Company have issued their moonlight chart for June, compiled by their chief engineer, Mr. A. H. Midgley.

Edinburgh Queensferry Tramways.—It is reported that the Midlothian County Council will oppose the provisional order for the construction of this tramway, in order to procure protective clauses.

Tramway Car Struck by Lightning.—A car on the Burton and Ashby Light Railway, while travelling between Bretby and Sunnyside, was struck by lightning and caught fire, which was extinguished by the use of sand.

Carlisle Tramways Company are overhauling their cars and repairing the permanent way. The licensing of women drivers necessitated by the shortage of labour will, it is hoped, shortly enable an efficient service to be maintained.

Tramway Employees Wages.—An application on behalf of the Bolton tramway workers for 12½ per cent advance in wages and for the equal payment of war bonuses to men and women has been referred to the Committee on Production.

Electric Power Supply.—The report of the debate held at the Engineers' Club, Manchester, on March 5, 1918, on the interim report of the Coal Conservation Sub-Committee, has been issued in pamphlet form, and copies may be obtained on application to the Honorary Secretary, the Engineers' Club, Manchester, price 4d. each, including postage.

Bath Tramway Car Overturned.—While descending a gradient outside Locksbrook Cemetery, Weston, Bath, on Wednesday morning, a tramway car left the rails, dashed into a boundary wall of some houses and overturned. Twenty passengers were injured, including several convalescent soldiers. The woman driver and conductor were only slightly hurt.

Trolley Wire Falls at Glasgow.—Cars on the Glasgow Corporation tramways were delayed on the evening of May 23 owing to the falling of a trolley wire near the junction of Sauchiehall Street and Renfield Street, a point where several of the more important services converge. Repairs were effected in about fifteen minutes, but a large number of cars were brought to a standstill.

A 75,000 h.-p. Turbo-Generator.—The *Daily Mail* reports that the German A.E.G. now claims to be building the largest turbo-generator ever constructed, which will generate 50,000 k.w. (70,000 h.-p.). This is proclaimed in the German press as a colossal achievement in the midst of war, and in view of the shortage of raw materials, especially nickel. The German press are apparently unaware that larger machines are now being constructed in the United States.

Protecting Passengers' Rights at Barriers.—At Leeds a passenger was summoned recently for a breach of a by-law in mounting a car while in motion between Upper Head Row and the new barriers in Briggate. The defendant boarded a car which was proceeding in the direction of the barriers, and thus took an undue advantage of intending passengers who were waiting there. The defendant was ordered to pay the costs of the action.

Protest against Women Drivers.—The Brierley Hill Trades Council have instructed their secretary to write to Mr. W. G. Bond, general manager of the Birmingham and Midland Tramways Company, and to the Ministry of Labour, protesting against the employment of women drivers on the Dudley and Stourbridge tramways, on the grounds of the bad condition of the track, the steepness of the gradients, and the safety of the passengers and the general public.

The Tramways and Light Railways Association.—The *Journal* for May gives the resolution of the House of Commons appointing a Select Committee on the revision of tramway fares; an article on the "National Need for Saving Coal," by Mr. William Arthur, an electric railway engineer of New Haven, U.S.A. This was originally issued as a pamphlet entitled "Trolleymen's Handbook on Efficient Car Operation," and was written at the suggestion of the president of one of the large eastern tramways in America in the interests of national coal and power saving. Major Pringle's report on the accident that occurred at Bradford on February 1 is also reprinted.

Another Record at Glasgow.—The tramway department has broken another record by earning £30,355 for the week ended May 25. The previous highest record was £29,947, that amount being taken in the last New Year week. The financial year closes on Friday night, May 31, and the year's receipts will show a great increase over those of the preceding year. For the fifty-one and a half weeks ended May 25, the total receipts amounted to £1,379,437, an increase of £158,209.

Incorporated Municipal Electrical Association.—The twenty-third annual general meeting will be held at the Town Hall, Manchester, on June 20 and 21. By the permission of the Council, the meetings will take place in the Council Chamber. Attendance at the meeting is restricted to members and associate members qualified to be present. No invitations are being issued to visitors on this occasion. The papers and reports will be taken as read, and those who desire to receive advance copies should notify the secretary, Mr. C. McArthur Butler, 28, Bedford Square, London, W.C.1. On Thursday, the Lord Mayor of Manchester will welcome the Association at 10 a.m. Mr. S. J. Watson, borough electrical engineer, of Bury, will deliver his presidential address, and there will be a discussion on "The Future of Electric Power Supply," introduced by Mr. S. L. Pearce. In the afternoon opportunities will be afforded for visits to Stuart Street power station and the works of the British Westinghouse Company, Ltd., Trafford Park. There will be a smoking concert at the Engineers' Club, at 8 p.m. On Friday the annual general meeting will take place.

Parcel Traffic at Southend.—The Board of Trade recently suggested to the Southend Corporation that a parcels service should be established, but the Tramways Committee have replied that they had not the necessary facilities.

Compensation for Use of Car Depot.—The Defence of the Realm Losses Commission has granted the Aberdeen Corporation an annual payment of £600, exclusive of rates and taxes, for the occupation of the tramway depot.

Sale of Municipal Lighting Plant.—Wednesbury Town Council has decided to sell the Corporation's electricity undertaking to the Midland Power Company, Ltd. The latter is to pay to the Corporation all its capital liabilities in fifteen annual instalments of £5,000.

Track Repairs on L.C.C. Tramways.—The London County Council have informed the Deptford Borough Council that they hope to be able to carry out repairs to the tramway track in New Cross Road during the summer. Temporary measures are being taken at once in New Cross Road and Lewisham High Road.

New Uniforms at Portsmouth.—The male employees of Portsmouth Corporation tramways appeared in new uniforms at Whitsuntide. These differ somewhat in colour from the uniforms just discarded, and have something of a military character about them. The colour is dark grey with red piping, and the tunics are shaped like those of the Royal Air Force, fastening up slantwise at the side. The women employees are shortly to receive new uniforms also.

Proposed Municipalisation of Tees-side Tramways.—The Stockton and Thornaby Trades and Labour Council are conducting a campaign in favour of the municipalisation of the Tees-side tramways. Various councillors have been interviewed to ascertain their opinions, as to the advisability of the Corporation purchasing the system, and it is proposed to hold public meetings in conjunction with a Middlesbrough Committee to put the matter before the citizens of that town.

Obstinate Drivers Delay Traffic.—Two tramway cars met on a single track on Northcote Road, Croydon. Neither driver would give way and the traffic between Croydon and the Crystal Palace and Penge was consequently held up for twenty minutes. Both drivers treated the policeman's orders with indifference. The two men were summoned and a fine of 40s. was inflicted on the driver who should have withdrawn his car, and the other driver was ordered to pay 20s.

Organising Road Transport.—The Road Transport Board are preparing for the registration of vehicles and for the introduction of a priority scheme for use in emergencies. Local schemes for organising road transport have also been devised, and plans for the classification of vehicles in emergencies are being prepared for the War Office and the Home Office. A new regulation has been made under the Defence of the Realm Act giving the Road Transport Board certain definite powers to secure these objects.

New Tickets at Salford.—A new system of tickets will shortly be introduced on the Salford Corporation tramways. Various stages were recently shortened and the new tickets necessary for this will contain numbers for the various stages instead of as at present the name of the stage. The new system will enable the tickets to be used on any route, and will thus prevent a waste of paper when the alterations in stages are decided upon. The number of the stages will be displayed on the tramway standards, and until the passengers become accustomed to the new system, the conductors will call out the number of the stage as it is reached.

Plymouth Employees' Demands.—The tramway employees' branch of the Dockers Union, having considered the report of the deputation which attended a meeting of the Tramways Committee on Wednesday, May 22, instructed their officials to ask the Tramways Committee to state their reasons for their opposition to the men's demands. They declined to accept the conditions set forth in the letter of May 22 as the decision of the Committee, and adjourned until Sunday, June 2, in order that the officials might again approach the Committee. At the meeting of the Tramways Committee to which reference is made, various concessions with regard to wages were granted, but the Committee felt unable to make any alteration in the hours of work per week, and they adhered to their former decision not to require the employees to belong to any union, leaving them free to act as they individually thought best.

More Whitsuntide Records.—Fine weather and the absence of railway facilities assisted the Birmingham Corporation tramways department to create another record for the Whitsun week-end. In the four days from Saturday to Tuesday, inclusive, the cars carried 2,864,000 passengers, and the motor omnibuses a further 114,000. Monday's traffic specially taxed the department's present resources. About 530 cars and nearly 50 motor omnibuses were in use, and the receipts formed a record for any Bank Holiday. The passengers numbered 880,000, an increase of 20,000 as compared with Whit-Monday in 1917. On the following day, 700,000 tramway tickets were issued and 25,000 motor omnibus tickets. Wigan tramway records were also broken by the Whit-Sunday holiday traffic. The sum taken on the Saturday was the highest revenue ever received for any one day; the receipts aggregated £519, an increase of £348 over the corresponding day of 1917. For the three days—Saturday to Monday—there was a total increase of £544 as compared with a year ago. A record was also made at Birkenhead, the total receipts for the three days showing an increase over the takings in the previous year of £318. On Saturday the receipts were £450, or £19 more than the previous best record.

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Objection to Women Drivers.—The Stoke-on-Trent branch of the Amalgamated Society of Tramway and Vehicle Workers have protested against the employment of women as drivers,.

Fire at L.C.C. Tramway Depot.—A fire broke out at one of the shops of the London County Council tramway depot at New Cross just before midnight on May 21. Two cars were damaged and some platforms used for cleaning the cars.

Large Generators in the United States.—The New York *Electric Journal*, reviewing American electric progress during 1917, states that more contracts for generating units of large capacity were placed than ever before. As examples it mentions the installation of a 40,0 0 kw. unit by the Duquesne Light Company, of Pittsburgh, a 45,000 kw. unit by the Narragansett Electric Company, of Providence, and a 75,000 kw. triple element unit by the Interborough Rapid Transit Company, of New York.

Halifax Motor Omnibuses.—The Corporation omnibuses are now running about 1,200 miles per week. For the week ended May 21, the receipts per omnibus mile were 18·7d., an increase of 4·22d. over the corresponding week of the previous year. The run per gallon of petrol was 2·89 miles, or 1 73 miles less than a year ago. For the seven weeks of the current financial year the receipts per omnibus mile were 14·20d., or 2·26d. more than a year ago, while the run per gallon was 2·96 miles, a decrease of ·94 miles.

Fire at the Isle of Thanet Tramway Depot.—A fire occurred at the Isle of Thanet tramway depot, St. Peters, at 8.30 p.m. on May 29. Soldiers and sailors assisted the firemen, but though the cars were taken out and the power house saved, the offices and stores were burned out. The damage is estimated at about £2,500. The fire appears to have originated in a store room near the entrance. The tramway traffic and the lighting was not interfered with.

Grading of Scottish Tramways.—A meeting of the Advisory Committee of Area No. 8 of the Tramways (Board of Trade) Committee was held in Edinburgh on May 22. Mr. James Dalrymple, general manager of the Glasgow Corporation tramways, presided, and all the municipal and company-owned tramways in Scotland were represented. The conference considered the grading of tramway undertakings in Scotland, which will ultimately be classified into indispensable routes, less important routes, and others to be restricted or closed during the period of national crisis. The Advisory Committee's recommendations will be submitted to the Board of Trade.

Traffic Difficulties at Blackpool.—Great difficulty in dealing with the traffic at Blackpool is being experienced at the present time, for the demands made upon the department are constantly increasing. Appeals to the public to refrain from using the cars are unheeded, and the people are eager to stand in crowded cars rather than walk. The general manager and electrical engineer has pointed out that the tracks are in a bad condition owing to the scarcity of labour and the overcrowding puts too great weight on the rolling stock and the rails. The local press has joined the tramway management in urging that "those with nothing to do and plenty of time to do it in" would find that the habit of walking would do them much good.

Restriction of Services at Norwich.—As a result of the protest of the Town Council, the Norwich Electric Tramways Company have resumed a restricted service of cars on the Eaton route. The *Eastern Daily Press*, in commenting on the matter, remarked that it has been the general experience of the city, during the many years that Mr. F. W. Ketley has held the office of general manager of the tramways that there has been every disposition to regard the requirements and the convenience of the citizens, and it is quite bottom of the public declaration of hostilities at the recent Council evident that some easily removable misunderstanding was at the meeting. The restrictions imposed upon the tramway company by the Board of Trade were clearly a question for friendly discussion rather than for an ultimatum, which the action of the Council seemed to threaten.

Whit-Sunday Strike at Hastings.—The tramway employees of Hastings Tramways Company struck on Whit-Sunday morning. The town was crowded with visitors, and the strike not only entailed a loss to the company, but caused much public inconvenience. Negotiations were opened, and at the invitation of the Mayor a conference was held in the evening when a deputation of the employees, including a number of women workers, met the Mayor and the Corporation, and an agreement was reached shortly after midnight. This provided that a woman ticket inspector should be transferred from her present position as soon as possible, and in the meantime should be precluded from having any verbal communication with the motormen on the route. It was stated by the secretary of the men's union that the strike was not directed against the inspector as a woman.

Women Drivers in London.—For some weeks a few women have been in training as drivers on the London County Council cars, and the Chief Commissioner of Police has now licensed women to act as drivers on the Walthamstow Council cars. Mr. William Murray, the manager of the Walthamstow tramways, states that five women, who have all served as conductors for some time, have passed through a three weeks' course of training as drivers and are ready to drive the cars. They take the place of Grades 1 and 2 men and will be paid the same wages as the men—31s. a week, rising to 37s., with a war bonus of 10s. a week. The women are described as being very apt to learn and the manager is confident that they will make satisfactory drivers. Mr. Murray has been agitating for a licence for women drivers for over three years; but hitherto the Commissioner has refused to grant it.

PERSONAL.

Mr. Harrison Barrow, chairman of the Birmingham Tramways Committee, has resigned his seat on the Council of Birmingham Corporation.

Mr. J. B. Hamilton, general manager of Leeds Corporation Tramways, has taken charge at the request of Lord Rhondda of a new department to be called the General Storage and Inland Transport Department, which will co-ordinate the work of all existing branches of the Ministry of Food at present dealing with these questions. On Monday the Leeds Tramways Committee consented to release Mr. Hamilton temporarily in order to allow him to act as Transport and storage officer, and expressed satisfaction that his services have been so much appreciated. Mr. Hamilton has previously been engaged in work for the Admiralty and is now a member of the Tramways (Board of Trade) Committee. As hitherto he will be in Leeds for week ends to deal with any pressing business connected with the tramways.

Captain George Leonard Andrews, R.G.A., who was killed in action on May 3, gave up an important position in the Pernambuco Tramways and Power Company to join the Army. He served in France and Egypt. For a year he had been engaged in training Portuguese in gunnery, a work involving the translation of the necessary text-books from the English, and he returned to the front only a month before his death. Captain Andrews, after receiving the degree of B.Sc. at the University of London, took the degree of Bachelor of Engineering at Sheffield University. Subsequently he held positions with the tramway companies of Kidderminster, Madrid, and Lisbon, and later became manager of the Para Electric Railways and Lighting Company and of the Pernambuco Tramways and Power Company.

FINANCIAL REPORTS AND MEETINGS.

The Brush Electrical Engineering Co., Ltd. announce a dividend of 6 per cent. on the ordinary stock for 1916 and 1917.

Indian Electric Traction and Supply Co., Ltd.—A final dividend has been declared, making 7½ per cent. for the year, and a sum of £685 has been carried forward.

The Provincial Tramways Company announce an interim dividend of 8d. per share, less income-tax, on the ordinary shares. A year ago the dividend was at the same rate.

Taunton Electric Traction Co.—The receipts for the year 1917, including £19 brought forward, amounted to £3,047. After deducting all expenses and debenture interests and making provision of £250 for renewals, the balance of £146 was carried to the next account.

British Electric Traction Co., Ltd.—The directors propose to place £20,000 to reserve and recommend the payment of a dividend of 6 per cent. on the cumulative participating preference stock, and a dividend of 3 per cent., the same as last year, on the ordinary stock.

Simplex Conduits, Ltd.—A dividend of 10 per cent., and a bonus of 10 per cent., both free of tax, have been declared. The rate is the same as a year ago. The accounts for 1917 show a net profit of £21,949, as compared with £8,689 a year ago. Including £7,372 brought forward, there is a disposable balance of £29,321; £2,000 has been placed to reserve, and £17,071 carried forward.

Huddersfield Corporation Tramways.—A financial statement recently submitted by the Tramways Committee shows that for the year ended March 31 last the total income amounted to £174,292, as compared with £152,436 last year. The surplus was £7,462, a decrease of £1,382. A sum of £6,750 goes to the relief of the rates, leaving a balance of £712, which was transferred to the reserve renewals account, which now amounts to £60,692. The traffic has greatly increased since the war, and the total of 22½ million passengers in 1914 has now reached 32½ million, equivalent to 200 journeys per inhabitant.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended May 29 amounted to £63,382, an increase of £786, as compared with the corresponding week last year, which included the Whitsuntide holidays. The past week was the first full week in which the increased fares have been effective, and the small increase is accounted for by the fact that the period compares with the holiday season last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to May 29 (eight and a half weeks), the total receipts were £503,188, an increase of £48,366 on the corresponding period of 1917.

London and Suburban Traction Co., Ltd.—The revenue of this company is derived almost entirely from investments, and for the year ended December 31, 1917, the directors report a substantial reduction in the returns compared with the previous year. The net revenue of the tramway and omnibus companies, in which the company is largely interested, have in nearly every case been adversely affected by the war, the increase in tramway receipts being more than balanced by the increased expenses of operation. The revenue for the past year, consisting almost entirely of dividends and interest from the subsidiary companies, amounted to £81,519. After deducting all expenses chargeable to revenue, including debenture and loan interest, and providing for the sinking fund charges upon the 5 per cent. debenture stock, there is a balance of £39,037, making, with £4,684 brought forward from the previous year, a total balance of £43,721. Out of this source a dividend on the preference shares at the rate of 2½ per cent. is paid, and £3,634 carried forward. The directors refer to the position of the London United Tramways, for which a receiver was appointed in June last.

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With the concurrence of the debenture holders' committee, the company is promoting a Bill in the present Session of Parliament with the object of securing an extension of the company's tenure of the tramways and an increase in fares. Subject to the passing of the Bill, a scheme for the reorganisation of the capital of the company has been provisionally agreed, under which funds will be provided for the reconstruction of the permanent way and renewal of rolling-stock and equipment.

Metropolitan Carriage, Wagon and Finance Co., Ltd.—The report presented at the annual meeting, to be held at Birmingham on Thursday, shows that the profit from the financial and manufacturing departments of the company, after making provision for contingencies and internal reserves, and including £161,264 brought forward from last year's account, amounts to £751,232. In interim dividends on preference and ordinary shares, a sum of £159,940 has been distributed, leaving a balance of £591,292, which the directors propose to appropriate as follows:—To reserve fund, £100,000; preference dividend for the half-year ended March 31, 1918, less income tax, on the "A" preference shares, at the rate of 5 per cent. per annum, £4,652, on the "B" preference shares at 6 per cent. per annum, £5,287; a final dividend of 1s. per share for the half-year ended March 31, on the ordinary shares, £150,000; a bonus on the ordinary shares of 1s. per share, £150,000; balance forward, £181,352. The directors state that they have further developed the financial department of the undertaking by acquiring controlling interests in allied commercial undertakings. Other negotiations are pending, and in order to enable the board to continue its policy as opportunity occurs, the shareholders will be asked to sanction the increase in the ordinary share capital to £10,000,000.

BUSINESS NOTICES.

The Premier Cooler and Engineering Co., Ltd., has removed its works and offices to larger and more convenient premises at Shalford Works, Shalford, near Guildford, Surrey, where all communications should be sent. The telegraphic address will be "Precooler, Shalford," and the telephone number "Shalford 27."

North Western and Bakerloo Service.—On week days after June 1, through trains between the Elephant and Castle and Watford, will run every fifteen minutes, morning and evening, and every half hour during the middle of the day and late evening, except on Saturdays, when there will be mostly fifteen minute intervals. The last train will leave the Elephant and Castle for Willesden and Watford at 11.5 and Watford at 10.40 p.m.

New Rail Welding Company.—Mr. Edward Jacob, managing director of the Tudor Accumulator Company, Ltd., has acquired from that company their business in rail welding, which is now being carried on at 119, Victoria Street, Westminster, S.W.1. The arrangements involve no change in the management of the Tudor Company, of which Mr. Jacob still remains managing director. Mr. Jacob has secured the services of the whole of the experienced engineering staff who have been carrying out hitherto the work of rail welding, and there is practically no change in the business. Mr. C. D. Barnett remains in charge.

The Shrewsbury S. T. and Challiner Tyre Co., Ltd., have opened new offices for the convenience of their customers in Scotland at 68, Gordon Street, Glasgow, and have equipped local premises in Great Wellington Street (Paisley Road Toll) with a large hydraulic tire press and plant for the fitting of sold tyres. These premises allow for the accommodation of vehicles, and have every facility for carrying out the work in the shortest possible time. To avoid dissappointment and delay in the delivery to buyers outside the Glasgow area, a suitable stock of tires will be kept in Glasgow for despatch at the shortest notice. All letters and communications should be addressed to the offices, 68, Gordon Street, Glasgow.

CONTRACTS AND ORDERS.

Newbury Council are about to buy a tractor and two trailers.

Portsmouth Tramways Committee have been authorised to purchase a Foden steam wagon.

Derby County Council intend to purchase two steam wagons, at a cost not exceeding £2,000.

Ilford Council has been recommended by the Works Committee to purchase a motor car for official use.

Cardiff Corporation Watch Committee have applied for a priority certificate for the purchase of a new petrol motor fire engine combined with a petrol driven 30 ft. turntable escape.

Motor Car for Bradford Corporation.—The chairman and deputy chairman of the Tramways Sub-Committee, with the general manager, have been authorised to purchase a small motor car, either new or second-hand.

Glasgow Tramways Committee recommends the acceptance of the tenders of Hadfields, Ltd., and Edgar Allen and Co., Ltd., for special track work. Contracts for six months in the majority of cases will be made with the following:—

H. Bessemer & Co., Ltd., and Brown Bayley's Steel Works, Ltd. Steel axles, tires, and wheels.

Carron Co.—Chilled-iron brake blocks (three months).

Spiers, Gibb & Co.; Glenboig Union Fire Clay Co., Ltd.—Fire-clay (six and 21 months).

North British Rubber Co., Ltd.; Clyde Rubber Works, Ltd.; George M'Lellan & Co.; Rubber Co. of Scotland; J. T. Goudie and Co.—Rubber and asbestos goods.

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Nottingham Corporation Tramways
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Wakefield & District Light Railway
Londonderry Tramways Company
Calcutta Tramways Company, Ltd.
Cawnpore Electric Tramways
Delhi Electric Tramways
Mandalay Electric Tramways
Dover Corporation Tramways
Newcastle-on-Tyne Corporation Tramways
Cork Electric Tramways and Lighting Co., Ltd.
Isle of Thanet Electric Tramways Company, Ltd.
Keighley Corporation Tramways
Keighley Corporation Motor 'Buses
Burton-on-Trent Corporation Tramways
Scarborough Electric Tramways Co., Ltd.
Aberdeen Suburban Tramways Co.
Paisley & District Tramways Co.
Hastings & District Electric Tramways Co., Ltd.
Gosport and Fareham Tramways Co.
Doncaster Corporation Tramways
Cardiff Corporation Tramways
Plymouth Tramways
Gloucester Corporation Light Railways
Ilkeston Corporation Tramways
Stockport Corporation Tramways
Ilford Council Tramways
Aberdeen Corporation Tramways
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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash May 30 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	66⅞	67
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅞	58/9	57/6
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4½	48/9	48/9
4%	4%	Do. 4% Deb.	100	91	72	71
4½%	4½%	Do. 4½% Deb.	100	98½	68	68
5%	5%	Do. 5% Deb.	100	96	62½	64½
—	—	Associated Omnibus Co., Ord. ..	5/-	1/32	1/2	1/2
1/-	6d.	Auckland Elec. Trams. Ord. ..	1	1 1/32	20/4½	20/4½
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	110	110
—	1/-	Bath Electric Trams Pref. Ord.	1	¼	3/6	3/6
6d.	6d.	Do. 5% Cum. Pref. ..	1	3/32	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	72⅝	77½
20/-*	28/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Do. 6% Cum. Pref. ..	10	11⅛	9 1/16	9 1/16
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	43½	43½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	85½	86½
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5⅝	5⅝
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	78/9	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91	91
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	33⅜	33⅜
6%	5%	Do. Pref. Ord.	100	106	42	42
5%	5%	Do. 5% Cum. Pref. ..	100	103	60	60½
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	83½	83½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	63½	63½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	31½	31½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	74	74
5%	5%	Do. 5% Deb.	100	92	77⅛	77⅛
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	63½	63½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	77⅛	77⅛
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6⅞	6⅞
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	80/-	81/3
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1	1/16	12/9	12/9
1/3	1/3	City of B. A. Trams	5	5⅜	81/-	79/4½
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	82	82
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	57½	59½
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 3/32	7 3/32
6/-	6/-	Do. 6% Pref.	10	12	10 1/16	10 1/16
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/3	1/3
1/2¾*	1/2¾*	Do. 6% Cum. Pref. ..	1	1/16	10/3	10/1½
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
8¾d.	8¾d.	Hong Kong Tramway	5/-	3/32	17/9	17/9
5%	5%	Do. 5% Deb.	100	87½	76½	80
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	¾	2/4½	2/4½
6/6	9/6	Lanarkshire Trams Co. ..	10	10½	10 1/16	10
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	69½	79½
9¾d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
--	1½d.	London & Sub. Traction Ord. ..	1	1/32	2/4½	2/4½
6d.	6d.	Do. 5% Pref.	1	1/32	6/6	6/3
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	60	60
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	81½	80½
5%	5%	Do. 5% Inc. Deb. ..	100	88½	76	76
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	35½	38½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	82/6	82/6
5%	5%	Do. 5% Deb.	100	100	84½	84½
7¾d.%*	9¾d.*	Manaos Trams & Ltg. Ord. ..	1	1/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	68	68
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	74½	74½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	69	69
5%	5%	Do. 5% Deb.	100	87	76½	76½
$1½	$1½	Mexico Trams. Common ..	$100	70	24	24
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	38	36½
—	—	Do. 6% Mt. Bds. ..	100	76	30	30
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs...	100	100	93½	93½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	91	91
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2¾*	National Steam Car	1	1/32	16/6	17/6
9¾d.*	9¾d.*	New General Traction	1	1/32	7/1½	7/1½
6d.	8¾d.	Northern Gen. Trans. Ord. ..	1	1/32	12/9½	12/9½
3/-	4/-	Para Elec. Rlys. Ord.	5	4½	78/9	78/9
5%	5%	Do. 5% 1st Deb.	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	8/-	7/9
—	—	Do. 7% Non. Cm. Part Pf.	1	—	14/-	13/10
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7¾d.*	8¾d.*	Potteries Elec. Trac. Ord. ..	1	1/32	6/9	6/10½
6d.	6d.	Do. 5% Pref.	1	1/32	12/6	12/6
8d	1/4	Provincial Trams. Ord. ..	1	¼	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	88½	87½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	73	73
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	85½	85½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	70	70
12/-	10/-	Shanghai Elec. Cons.	10	13	14⅜	14⅜
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/6½	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	94	94
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	78	78
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	35/-	35/-
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	57½	57
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅝	18/4½	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅝	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	72⅜	72½
—	—	Metropolitan Dist. Ord. ..	100	21½	15	14½
—	—	Undgd. Elec. Rys. of London ..	10	21½	34/4½	33/9
		Do. "A"	1/-	⅜	4/9	5/-
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	104½	104½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	99½	99
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	76½	77½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AND OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C. ..	May 21	406	626	+ 20	7	3,764	..
Aberdeen Corporation ..	,, 24	1,946	2,583	+ 637	51	111,840	+ 15,772
Ayr Corporation ..	,, 25	398	569	+ 171	1	802	+ 193
Belfast City	,, 24	6,076	7,901	+ 1,825	8	61,335	+ 14,922
Birkenhead Corporation ..	,, 26	1,702	2,476	+ 774	8	16,708	+ 3,431
Blackburn	,, 27	1,336	2,954	+ 1,618	8⅞	15,295	+ 5,102
Bradford Corporation ..	,, 25	7,381	10,055	+ 2,674	8	62,924	+ 6,466
Burnley Corporation ..	,, 25	1,760	2,786	+ 1,026	..	..	..
Burton-on-Trent Cor. ..	,, 26	293	470	+ 177	8	3,181	+ 1,008
Bury Corporation ..	,, 27	1,577	2,831	+ 1,254	8	15,484	+ 3,019
Chatham & District ..	,, 23	1,397	1,666	+ 269	21	24,539	+ 708
Cork Electric	,, 16	553	593	+ 40	20	11,412	+ 2,044
Derby Corporation ..	,, 25	1,211	1,889	+ 678	8	11,773	+ 2,988
Dundee City	,, 22	1,432	1,965	+ 533	1	1,965	+ 533
East Ham Corporation ..	,, 25	1,356	1,764	+ 408	7⅜	10,974	+ 43
Exeter Corporation ..	Mar. 22	302	373	+ 71	51	20,106	+ 301
Glasgow Corporation ..	May 25	26,711	30,356	+ 3,645	51⅜	1,379,437	+ 158,209
Glossop (U.E. Sup. Co.) ..	,, 25	157	241	+ 84	21	3,814	+ 1,054
Halifax Corporation ..	,, 21	2,172	4,255	+ 2,083	7⅜	20,119	+ 4,055
do. Motor Buses ..	,, 21	38	91	+ 52	7⅜	445	+ 130
Huddersfield Corporation	,, 25	3,127	5,490	+ 1,363	8	30,068	+ 4,335
Ilford U.D. Council ..	,, 25	754	1,297	+ 543	8	7,686	+ 2,142
Ipswich Corporation ..	,, 25	700	1,054	+ 354	8	5,676	+ 1,605
Isle of Thanet ..	,, 25	322	413	+ 91	34	6,275	— 2,159
Kilmarnock Corporation	,, 25	172	244	+ 72	1⅜	374	+ 94
Lanarkshire	,, 23	2,734	3,978	+ 1,244	21	68,582	+ 16,839
Lancashire United ..	,, 22	2,111	4,327	+ 2,216	21	55,962	+ 17,189
Leeds City	,, 25	10,831	15,168	+ 4,337	8	94,080	+ 14,386
Leicester Corporation ..	,, 25	3,815	5,775	+ 1,960	..	..	..
Leyton U.D. Council ..	,, 23	1,866	2,625	+ 759	8	16,203	+ 1,577
Liverpool Corporation ..	,, 18	15,708	18,338	+ 2,630	19⅔	334,660	+ 51,803
Llandudno & Colwyn Bay	,, 17	254	366	+ 112	24	6,677	+ 1,758
London County Council ..	,, 29	62,596	63,382	+ 786	8½	503,188	+ 48,366
Maidstone Corporation ..	,, 23	213	339	+ 126	7⅔	2,209	+ 483
Manchester Corporation	,, 25	23,553	30,144	+ 6,591	8	198,632	+ 42,665
Newcastle-on-Tyne Cor.	,, 25	7,789	10,338	+ 2,549	8	70,949	+ 14,439
New St. Helens & Dist. ..	,, 22	1,199	2,711	+ 1,512	47	67,309	+ 16,634
Northampton Cor. ..	,, 24	776	1,138	+ 362	8	7,141	+ 1,282
Nottingham Corporation	,, 23	4,205	7,471	+ 3,266	8	43,299	+ 12,562
Oldham Corporation ..	,, 26	2,814	4,363	+ 1,549	9	30,473	+ 6,564
Reading Corporation ..	,, 23	991	1,552	+ 561	8	9,452	..
Rhondda Tramways ..	,, 16	1,495	1,688	+ 193	20	32,080	+ 5,512
Rotherham Corporation	,, 22	1,666	2,411	+ 745	7⅔	15,782	+ 3,111
Sheffield Corporation ..	,, 26	11,896	14,952	+ 3,056	8⅔	119,339	+ 18,767
Southampton Cor. ..	,, 22	1,790	2,978	+ 1,188	7⅔	18,554	+ 5,361
Southend-on-Sea Cor. ..	,, 15	826	873	+ 47	7	4,984	— 2
South Shields Cor. ..	,, 18	879	1,116	+ 237	7	7,359	+ 1,558
Sunderland Corporation.	,, 25	1,819	2,494	+ 675	8	16,911	+ 3,584
Sunderland District ..	,, 8	669	870	+ 201	27	23,094	+ 6,045
Swindon Corporation	,, 22	268	350	+ 82	7⅔	2,264	+ 459
Torquay Tramways	,, 16	576	751	+ 175	20	14,047	+ 4,450
Tyneside Trys. & Trmrds	,, 8	766	905	+ 139	19	16,122	+ 4,176
Wallasey Corporation	,, 25	1,448	2,380	+ 932	7⅔	13,823	+ 3,072
Walsall Corporation ..	,, 25	926	1,680	+ 754	8	9,832	+ 2,718
Walthamstow U.D. Coun.	,, 25	1,263	2,055	+ 792	8	11,104	+ 2,644
Warrington Corporation	,, 16	512	712	+ 200	7	4,792	+ 1,564
West Ham Corporation	,, 23	3,709	5,122	+ 1,413	7⅔	31,396	+ 3,700
Wigan Corporation ..	,, 23	1,995	3,254	+ 1,259	8	18,863	+ 4,936
Yorkshire (West Riding)	,, 19	1,902	3,007	+ 1,105	20	48,863	+ 11,359

TRAFFIC RETURNS SUSPENDED.

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Birmingham, Blackpool, Blackpool and Fleetwood, Bolton, Bournemouth, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Dublin United, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Nelson, Newport (Mon.), Portsmouth, Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	May 27	£51,429	£54,989	21	£1,162,429	+ £81,605
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Feb. 24	3,196	3,902	48	40,644	+ 1,316
Brazilian Traction (Mlrs.)	Mar.	7,549,000	8,094,000	13	23,246,000	+ 1,559,000
Brisbane	Apr.	31,620	35,530	17	137,569	+ 9,789
British Columbia .. $	Mar.	456,626	510,892	39	4,495,271	+ 428,266
Buenos Aires Lacroze ..	Apr.	39,111	41,643	43	388,064	+ 2,601
Burmah Tram. & Light Rs.	Apr.	23,660	27,614	39	239,756	+ 4,945
Calcutta .. .. Rs.	May 25	64,830	70,877	21	1,498,321	+ 101,334
Cape Town	Apr.	16,705	19,011	..	..	..
Carthagena and Herrerias	Apr.	4,366	4,200	17	17,558	+ 3,032
Cordoba	Feb.	11,896	12,972	47	147,938	+ 435
East India	Apr.	1,445	1,791	39	12,287	— 5,398
Hong Kong .. .. $	Mar. 16	12,121	12,349	11	153,745	+ 2,605
Kalgoorlie	Jan.	2,431	2,522	4	2,522	+ 91
La Plata	Apr.	4,230	5,169	17	19,972	+ 2,807
Lima	Mar.	37,583	42,106	13	127,555	+ 18,900
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	May 15	34,285	42,003	19	362,787	+ 52,350
Manaos .. .. Rs.	Feb.	144,532	133,591	8	285,462	+ 5,563
Manila (8 weeks) .. $	Feb. 28	73,200	93,000	8	93,000	+ 19,800
Montevideo	Apr.	29,230	33,704	22	206,037	+ 19,415
Pernambuco	May 19	3,580	4,322	24	91,391	+ 19,485
Peruvian .. .. $	Apr.	957,500	1,079,880	43	10,402,440	+ 1,142,548
Port Elizabeth	Apr.	3,904	4,028	..	..	..
Rangoon	Apr.	5,036	5,885	17	22,863	+ 2,363
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Apr 6	14,148	13,751	14	187,999	+ 1,742
Toronto .. .. $	Mar.	991,192	1,113,472	13	3,163,724	+ 237,496
Winnipeg .. . $	Mar	293,094	307,289	13	940,830	+ 47,074

Wanted.—Copies of the Tramway and Railway World, Volume XXXIX, No. 1 (January 1, 1916), to complete files for binding.—Reply to Box, 24, The Tramway and Railway World, Amberley House, Norfolk Street, London, W.C.2.

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THE

Tramway & Railway World

Vol. XLIII.] No. 23

LONDON, SATURDAY, JUNE 8, 1918.

[Established in 1892.

ANNUAL SUBSCRIPTION (Postage Prepaid)—in the United Kingdom, 25s.; for all places abroad, 30s.

Including sixty-four issues, of which twelve are large illustrated numbers, printed on fine art paper

NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."

Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

BURGH OF LEITH.

Tramways Department, Overcoats.

The Town Council invite tenders for Overcoats, factory or tailor made as may be determined, for the following:—

Three Inspectors.
Thirty-five Drivers (Male).
Twenty-five Drivers (Female).
One Conductor (Male).
Thirty Conductors (Female).
Sixty Oilskins

all conform to samples to be seen and relative to the conditions of contract to be obtained at the Tramway Offices, 165, Leith Walk.

Tenders endorsed "Overcoats," along with separate samples marked with a private mark, which shall not be recognisable until the tenders are opened, must be lodged with me not later than July 9, 1918.

The Council do not bind themselves to accept any tender.

D. ROBERTSON,
Town Clerk.

Town Clerk's Offices, Leith,
June 7, 1918

COUNTY BOROUGH OF WARRINGTON.

Electricity Department.

The Electricity and Tramways Committee of the County Borough of Warrington invite Tenders for the following:—

High Tension Lead Covered Cable and Medium Tension Rubber Covered Cable.

Specification and Form of Tender can be obtained from the undersigned on payment of one guinea, which will be returned on receipt of a bona fide tender.

Five shillings will be charged for extra copies of the specification.

Tenders, addressed to the Chairman of the Electricity and Tramways Committee, Town Hall, Warrington, must be sealed with wax and endorsed "Tender for Cable," and delivered not later than 12 o'clock noon on Tuesday, June 18, 1918.

The lowest or any tender will not necessarily be accepted.

F. V. L. MATHIAS, M.I.E.E.
Borough Electrical and Tramways Engineer.

Howley, Warrington.

POSITIONS VACANT.

Overhead Linesman.

Wanted, Overhead Linesman for West of Scotland tramways, certificated munitions work. State age, experience. Salary 1s. 3d. per hour for all time. Apply, to Box 88, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

BOROUGH OF KEIGHLEY.

Electricity and Tramways Departments.

Appointment of Assistant to the Borough Electrical Engineer and Tramways Manager.

Wanted, a thoroughly capable Assistant for carrying out instructions in connection with both the Electricity and Tramways Departments.

He should be capable of controlling men, and have a good mechanical and electrical knowledge.

Preference will be given to those also having Tramway experience and the supervision of Mains work.

Salary £200 per annum, inclusive of all War bonuses and advances.

Application, in writing (from ineligible or low category men), for the above appointment, should be received not later than Monday, June 17, stating age, training, experience, and medical category, together with copies of three recent testimonials, to the undersigned.

HARRY WEBBER,
Borough Electrical Engineer and Tramways Manager.

Electricity Works,
Coney Lane, Keighley.

COUNTY BOROUGH OF BOLTON.

Electricity Department.

Wanted, two Junior Engineers-in-Charge, with E.H.T. and D.C. experience. Wages £2 per 56-hour week, plus £1 and 12½ per cent. War Bonus.

Applications, stating age, qualifications and experience, and whether eligible for military service, to be sent to the Borough Electrical Engineer, Back-o'-th'-Bank, Bolton.

SAMUEL PARKER,
Town Clerk.

Town Hall, Bolton.
May 25th, 1918.

CAR SHED FOREMAN.

Applications are invited for the position of Car Shed Foreman. Applicants to have had all-round experience in the various trades concerned.—Apply, stating age, experience, salary required, with copies of testimonials, to GENERAL MANAGER, Corporation Tramways, Exeter.

FOR SALE.

HULL CORPORATION ELECTRICITY DEPARTMENT.

Generating Sets for Sale.

The Hull Corporation Electricity Department invite offers for the following plant which has fallen into disuse through the installation of larger units at their Sculcoates Lane Works, viz:—

Two High-tension Direct Current Generators (2,250 volts, 90 amps., 350 R.P.M.) direct-coupled to Willans and Robinson tandem, three-crank compound engines, together with ejector condensers, connecting pipes and valves; also one spare armature for above.

One Direct Current Generator (460 volts, 390 amps., 350 R.P.M.) direct coupled to Allen vertical compound engine, together with ejector condenser, connecting pipes and valves.

The above plant, which is in first-class condition, can be inspected at any time by appointment, and any further particulars may be obtained from the undersigned.

Tender, endorsed "Sale of Plant" to be sent, under seal, and addressed to the Chairman of the Electricity Committee, Guildhall, Hull, by not later than noon on Thursday, June 20, 1918.

The highest or any tender not necessarily accepted.

J. F. MAGORIS,
Acting City Electrical Engineer,

Electricity Works, Sculcoates Lane, Hull,
May 27, 1918.

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OF EVERY DESCRIPTION.

SAND OR DIE - 2 h.p. to 600 h.p.

ROBERT W. COAN,

Telegrams: KRANKASES, ISLING, LONDON. | 219, GOSWELL RD., LONDON, E.C. | Telephones: 3846 CITY. 4879 CENTRAL

TRAMWAY SUPPLIES, Ltd.

Tramway Engineers,

OVERHEAD LINE MATERIALS AND SUPPLIES.

Sole Manufacturers of

TURNER'S PATENT AUTOMATIC POINT CONTROLLERS.

Telegrams: "Controllers, Leeds." Telephone: 26883 Leeds. | 160, WOODHOUSE LANE, LEEDS.

BRIMSDOWN WHITE LEAD

AND

BATTERY LITHARGE.

OFFICE & WORKS:

BRIMSDOWN LEAD CO., LTD.

BRIMSDOWN

MIDDLESEX.

TELEPHONE: WALTHAM CROSS 132 | TELEGRAMS: HYDRATION ENFIELD

ROLLING STOCK SPECIALITIES.

OUR RATTAN

(NATURAL, GLAZE, DULL FINISH, OR COLOURED)
in twill, straight, or fancy weaves, canvas backed or unbacked, is

BRITISH MADE THROUGHOUT

from the splitting of the cane to the finished article.

We hold **LARGE STOCKS OF RAW MATERIALS** and can GUARANTEE PROMPT DELIVERIES.

Particulars of other **BRITISH SPECIALITIES** *upon application.*

THE GENERAL SEATING COMPANY, LTD.

13, CITY ROAD, LONDON, E.C.

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THE
Tramway AND Railway World

Established in 1892 and Published by

THE TRAMWAY & RAILWAY WORLD PUBLISHING CO., Ltd.
AMBERLEY HOUSE, NORFOLK STREET, LONDON, W.C.

Sixty-four issues are published annually, including twelve large numbers which are fully illustrated and printed on art paper.

SUBSCRIPTION.

The TRAMWAY AND RAILWAY WORLD can be obtained, post free, at the following rates :—

FOR THE UNITED KINGDOM—Twenty-five Shillings per annum including 64 issues, of which 12 are illustrated numbers. One Shilling per Single Copy.

FOR ALL PLACES ABROAD—Thirty Shillings per annum.

SATURDAY, JUNE 8, 1918.

TRAMWAY RECONSTRUCTION.

Prior to the formation of the Board of Trade (Tramways) Committee and their constituent areas throughout the country, the obtaining of materials for the maintenance of tracks, cars and overhead equipment had become both chaotic and impossible. The first six months' existence of the new organisation, which displaced the priority arrangements instituted by the Ministry of Munitions, has witnessed a great improvement as regards supplies to meet current wants, and it would be difficult now to find justification for the fears that were expressed at the outset as to the constitution and work of the new body. All sections of the industry have worked harmoniously through their expert representatives in carrying out delicate tasks, the most notable of which has been the grading of the undertakings into indispensable routes, less important routes, and others to be restricted or closed during the period of national crisis. Unfortunately, the prospect of the war continuing for an indefinite period will render it possible for the good work of the Committee still further to demonstrate the wisdom of the action taken by the President of the Board of Trade upon the instigation of the two Associations that represent the interests of the industry. Another outcome of the Committee's labours will doubtless be that the statistics available will prove especially valuable when the time arrives for wholesale reconstruction. A further survey at that period should establish beyond the possibility of doubt what work will be necessary. Meanwhile, the increased demand that the fluctuations of the war are making upon industrial works for munitions, etc., will render the grading scheme more and more useful for obtaining from existing tramways materials that would not otherwise be available. A visit to any centre of heavy traffic will indicate how urgent is the need for replacements. From the point of view of materials, there will probably be no industry that will stand in greater need of reconstruction after the conflict than tramways. In order to facilitate the demands being met we would suggest that before long the two Associations should consider the advisability of urging the Government to arrange that plans should be prepared for the manufacture of tramway materials immediately peace is assured by the extensions of the great private works that have been brought into existence. This would provide highly profitable business at a critical period. Nor should the Associations fail to press for a less expensive and more expeditious manner of obtaining sanction for the tramway extensions required after the war. At the request of the Board of Trade a list of such projects has already been prepared, and it is likely to be added to as the result of the Government's decision to co-operate with local authorities in the provision of 300,000 houses within a year after the close of the war. The Select Committee on Local Legislation recently recommended the granting of better facilities for public utility schemes, and the Government policy upon the housing question will in numerous cases materially depend for its success upon the prompt designing and construction of additional travelling facilities.

EDINBURGH TRAMWAYS MANAGEMENT.

The Tramways Committee of the Edinburgh Town Council, at a meeting on June 5 received applications for the position of manager of the Edinburgh Corporation Tramways. The list of applicants is as follows: James Allan, Joppa; Ronald J. S. Chambers, Brighton; William Clough, Bury Corporation Tramways; John Copland, Stromness; Fred. Coutts, general manager, Paisley District Tramways; B. C. Douglas, Edinburgh; Frederick Andrew Fitzpayne, general manager, Leith Tramways; O. F. Francis, tramway manager, Kirkcaldy; Lionel E. Harvey, Ilford Tramways; H. Holliday, Rhondda Tramways; R. L. Horsfield, Walsall Tramways; John Jack, Edinburgh; Edward Lafferty, Edinburgh; V. G. Lironi, Portsmouth Tramways; Duncan Paterson Morrison, Gateshead Tramways Company; J. W. Murray, Edinburgh; William J. M'Combe, Hull Tramways manager; William Oglivie, Wakefield; R. Stuart Pilcher, general manager, Aberdeen Tramways; E. S. Rayner, Doncaster Tramways; J. R. Wilson Reid, Edinburgh; M. L. Slattery, West Ham Tramways; Henry Potts Stokes, Bexley and Dartford Tramways; T. R. Whitehead, Coventry Tramways,; R. H. Wilkinson, Huddersfield Tramways; H. Wright, Worcester; H. E. Yerbury, Sheffield Electric Supply Department.

In addition to the above applications we understand that there were two others from leading tramway managers in England, who indicated, however, that they would only be prepared to be considered applicants if the salary was not less than £1,250 per annum instead of £1,000 mentioned in the advertisement. It was agreed to circulate among the members of the committee copies of the applications with testimonials, and to meet on Wednesday next for the purpose of drawing up a short list in connection with the appointment. The Committee desire to have the appointment made as soon as possible.

NOTABLE TRAMWAY RESULTS IN GLASGOW.

Glasgow tramways department have issued a statement giving in detail the result of the operations for the twelve months ended May 31. The income for the year reached the record total of £1,404,110, an increase of £158,502. This gave a percentage of 12·832d. per car mile, which is an increase of 1·240d. The average track mileage open (single) was 186¼, and it is notable that the car mileage for the year of 26,261,231 was nearly half a million in excess of the previous year. Passengers totalled 430,946,566, or 16·409 per car mile, an increase of 1·350.

As regards the separate fares the feature was the extraordinary boom in halfpenny tickets. These increased at an average of almost half a million each week throughout the year. The following gives the number of passengrs carried at each fare :—

	Year to May 31, 1917–1918.	Year to May 31, 1916–1917.
½d.	272,902,138	247,971,348
1d.	110,608,645	100,118,754
1½d.	28,462,112	24,970,118
2d.	9,332,956	7,839,444
2½d.	4,351,666	3,540,215
3d.	2,215,506	1,720,316
3½d.	2,696,504	1,879,053
4d.	377,039	255,628
	430,946,566	388,294,876

In the increase of 42,651,690, in the number of passengers last year, the large proportion of 24,930,790 was accounted for by halfpenny fares, while 10,489,691 were in the penny class. The weight of copper received was 826 tons, while silver weighed 114 tons. Since the Corporation took over the tramways on July 1, 1894, the passengers have totalled 5,236 millions, and the car revenue 18¾ millions sterling.

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TRAMWAY FARES.

REPORT OF THE SELECT COMMITTEE.

The Select Committee appointed to consider and report whether it is expedient that provision should be made for the temporary modification of statutory requirements with regard to the charges for the conveyance of traffic on tramways and railways constructed wholly or mainly on public roads in the case of undertakings whose financial circumstances have been injuriously affected by causes arising out of the war; and, if so, on what terms and conditions, and whether by private bill or by general legislation, have agreed to the following Report:—

1. Your Committee have confined their investigation to the question of principle, being of opinion that examination of individual cases would have involved a prolonged inquiry, and would not have assisted them to arrive at general conclusions.

2. Id accordance with this decision, evidence was tendered by the Tramways and Light Railways Association, representing Companies, and by the Municipal Tramways Association, representing Municipal Tramway undertakings. Full opportunity was afforded for other evidence to be tendered, but none was forthcoming.

3. The evidence may be roughly summarised as follows:—All Tramway and Light Railway undertakings are injuriously affected by increased working expenses due to the war, wages having risen from 60 to 100 per cent., and the advance in cost of materials varying from about 100 per cent. to over 200 per cent. on pre-war rates. In addition, the increased cost of fuel and consequently of power, coupled with restrictions on supply, should be taken into consideration, and an Order in Council, dated December 21 last, amending the Defence of the Realm Regulations in respect of tramway materials and plant, definitely indicates substantial interference with the operation of these undertakings. The larger revenue earned by many tramways does not compensate for the constantly advancing working costs; but in most of the large towns, where the tramway systems are generally owned by the municipalities, there is still a margin, since the fares charged are in most cases lower than the statutory maximum.

The plea for immediate relief is put forward on behalf of the undertakings which are now charging maximum fares and yet are unable to pay their way.

4. Certan statistics were supplied to your Committee at their request. These figures showed that out of 80 municipal undertakings only 28 are charging maximum fares to ordinary passengers and 44 are charging maximum workmen's fares; the remainder are therefore more fortunately placed, or they are showing perhaps tenderness towards the passengers as distinguished from the ratepayer.

5. Your Committee are satisfied that some possibility of relief should be afforded to those undertakings which cannot increase their revenue to compensate them for the abnormal working expenses occasioned by war conditions. Although in the case of municipalities deficits can be made good out of the rates, your Committee agree with the principle that the passenger should not be carried at a loss.

6. Your Commitee therefore recommend that the Board of Trade should be empowered by general legislation to permit the temporary modification of statutory requirements with regard to the charges for the conveyance of traffic on tramways and railways constructed wholly or mainly on public roads in the case of undertakings whose financial circumstances are proved to the satisfaction of the Board to have been injuriously affected by causes arising out of the war.

7. Your Committee are of opinion that the word "temporary" in the preceding paragraph should be interpreted as covering a period limited to the duration of the war and two years after its termination.

PROGRESS OF WALTHAMSTOW TRAMWAYS.

Mr. W. Murray, general manager, in his report for the year ended March 31, 1918, remarks that it was the thirteenth year of operation, and several causes had combined to make it the most difficult and yet the most successful. In spite of an enormous increase in traffic revenue and of other burdens due to the war, by the wholehearted loyalty of the staff all difficulties have been surmounted. Over 14,000,000 passengers were carried and there was a net cash surplus of £7,500. This result Mr. Murray attributed to the excellent relations that have for so long been maintained between the Council and the tramway staff, and the mutual goodwill thus engendered. Various increases in wages have been granted, and when the official award was given above pre-war rates of 20s. per week to men, and 10s. per week to tramway women, the Council was among the first to pay the increased wage on the first pay day following the issue of the award, an action much appreciated by the staff. The willingness of the men has been beyond all praise. For three years practically the whole of the motormen have worked continuously seven days per week, and they frequently take extra turns after their normal day's work, sometimes adding as much as three days to their ordinary week's work.

In previous reports Mr. Murray has dealt with the necessity of obtaining power to employ women as drivers in Walthamstow, and he has now obtained the consent of the Commissioner of Police for women to do this work. The work of the women conductors, who have been employed for over two years, has been in every respect satisfactory, but difficulty is now arising owing to the range of selection being narrowed on account of the increased work available for women. Part time drivers were engaged with the object of relieving the pressure on the staff at week ends, but most of these drivers have since abandoned the work. A considerable number of men returned from the Army have been trained as motormen, but the majority found the work too strenuous. Mr. Murray has been forced to the conclusion that when the Army discharges a man as unfit for their purpose, he is not capable of withstanding the strain and exposure to which a car driver is subjected.

Two years ago the Council, in view of the increase in expenditure, decided to revise the fares and fare stages. The result has been most gratifying, and Mr. Murray thinks they were fortunate in having taken time by the forelock. During the past twelve months the department lost considerable revenue owing to air raid alarms. The traffic receipts, which amounted to £63,466, form a record and were £8,365 above those of the previous year. The net balance after meeting all expenses, including repayment of loans and interest (£9,888) and war bonus and separation allowances (£2,600) was £7,500, an increase of £246. The traffic returns for the last thirteen years were as follows:—

Year ending March 31.	Miles	Passengers	Receipts	Av: Receipts per car mile.
1906 ..	653,660	5,743,010	£20,882	7.60d.
1907 ..	832,372	8,729,521	29,352	8·30d.
1908 ..	922,205	9,756,904	31,277	7·94d.
1909 ..	896,737	9,904,037	32,959	8·58d.
1910 ..	881,111	10,640,494	34,755	9·28d.
1911 ..	910,877	11,316,684	36,564	9·45d.
1912 ..	1,004,872	12,049,323	38,990	9·13d.
1913 ..	1,151,029	11,807,549	37,900	7·76d.
1914 ..	1,166,027	12,579,852	39,308	9·94d.
1915 ..	1,146,743	13,499,838	41,346	8·65d.
1916 ..	1,058,569	14,688,463	45,953	10·41d.
1917 ..	1,128,029	12,367,758	55,719	11·85d.
1918 ..	1,131,077	14,304,693	64,000	13·46d.

REDUCTION IN CAR SERVICES.

Representatives of Huddersfield Tramways Committee, the employers, and trades unions recently met to consider proposals for staggering the tramway traffic. It is suggested that a variation in the opening and closing time at certain mills would have beneficial results. From the workmen's point of view there would be increased ease and comfort and efficiency of the service; the employers would gain, as workmen would be able to take up duty with more energy than after walking to work, while the department would find the traffic more comfortably worked and additional passengers would be carried. Councillor E. H. Sellers, chairman of the Tramways Committee, said they would have to economise in mileage and something must be done. Mr. R. H. Wilkinson, general manager of the tramways, added that the Government authorities had moved in the matter and a reduction in the service was necessary. They were running about thirty special cars morning and evening, and if the suggestions were adopted many of the cars could be taken off, thus saving mileage. It was decided that Mr. Wilkinson should draw up a scheme which will form the basis for further discussion.

Sunderland Tramways Committee, in their efforts to postpone as long as possible further curtailments of the services, are trying to arrange with the shipbuilding and engineering employers to vary the hours at different works, so as to enable the workmen to be carried more expeditiously. The heaviest demands in Sunderland take place during the dinner hour and the period between 5 p.m. and 8 p.m. A proposal has been placed before the employers that one factory should close at say 4.50 p.m., and another at 5 p.m., and so on. In this way it is thought that the rush traffic could be handled without interference with the service on all sections. Non-essential travellers are asked not to use the cars during the dinner hour and from 4.45 p.m. to 5.45 p.m.

TRAMWAY WORKERS' CONFERENCE.

The Amalgamated Association of Tramway and Vehicle Workers continued their conference in Birmingham on Saturday last, when the question of women car drivers was discussed. Mr. S. Hirst (General Secretary) stated that several interviews had taken place with the National Service Department officials, but the executive of the Association had taken a definite stand on the matter, and decided that under no circumstances would they give permission for the employment of women drivers of tramway cars.

The National Service Department promised to consider the question of placing the tramway industry on the list of protected occupations and to fix an age limit.

The scheme for amalgamation with the London and Provincial Union of Licensed Vehicle Workers was accepted with certain reservations. The conference also approved of the Executive's action in becoming affiliated with the National Transport Workers Federation.

TRAMWAYS (BOARD OF TRADE) COMMITTEE.

At a meeting of the Advisory Committee of Area No. 8, held at Edinburgh on May 22, Mr. Peter Fisher, chairman of the section, presided. By an error in our last issue it was mentioned that Mr. James Dalrymple presided, but he was present in the capacity of a member of the Tramways (Board of Trade) Committee, for the purpose of collecting information for the parent committee.

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MISCELLANEOUS NEWS AND NOTES.

No Special Cars at Sunderland.—The Tramways Committee have decided that until further notice the public hire of special cars for school treats, etc., shall be discontinued.

Labour Shortage at Blackpool.—The Tramways Committee are asking the War Office for the services of fifty men from the labour Battalion to be placed at the disposal of the Corporation for carrying out the necessary repairs to the permanent way.

Decimal Coinage.—On the motion of the second reading of the Decimal Coinage Bill in the House of Lords on Tuesday, the Government did not support the bill but expressed its willingness to appoint a joint committee to deal with it.

Queues for Omnibus Passengers.—The London General Omnibus Company, by arrangement with the police, are instituting the queue system at twenty-nine points on omnibus routes. During the busiest hours inspectors will be present at certain places to supervise the arrangements.

Omnibuses in East Sussex.—Under the Local Government Emergency Provisions Act, 1916, motor omnibuses are to be allowed to run on some of the main roads in the East Sussex County district on payment of 2d. per car mile. The cars must be the same size and weight as those now in use.

Breakdown on the L.C.C. Tramways.—Considerable delay to City and West-bound passengers was occasioned on Monday morning by a breakdown on the tramways on the Elephant and Castle section. Many cars were held up owing to an interruption in the current, and traffic was diverted to relieve the situation.

Free Rides for Wounded Soldiers.—The Lord Mayor of Manchester, alluding to the question of wounded soldiers being given facilities for free riding on the Manchester tramway cars, recently stated that no wounded soldier need walk from the hospital to the city. All that he had to do was to ask the matron for one of the discs supplied by the Tramways Committee.

London Motor Cabs Unprofitable.—Although each motor cab in the Metropolis is still allowed 60 gallons of spirit per month, there is a gradual decrease in the number in service. The owners find that, owing to increased expenses, they are unable to make a profit on the existing agreement under which the owner receives 75 per cent. of the earnings, the remaining 25 per cent. going to the driver. Since the increased prices for petrol were instituted at the beginning of May, some 200 cabs have been laid up in the garages, and more are expected to follow suit.

Collection of Used Tickets.—The Paper Controller has announced that a trial is to be made on certain routes of the London County Council tramways with collecting boxes for used tickets and that, if this is found to be satisfactory, the collection will be extended as soon as boxes or bags can be obtained. Provided that adequate information is given to passengers as to the necessity for the step, there should be no question as to the experiment proving successful. For years before the war several hundred pounds were realised annually at Glasgow by the sale of used tickets.

Exemptions at South Shields.—Mr. J. C. Whiteley, general manager, South Shields Corporation tramways, read a letter before the South Shields Tribunal recently from the Board of Trade, stating that instructions had been received from the Ministry of National Service to the effect that the calling up notices of men below Class A or Grade 1 were to be cancelled. The calling up of the men in the higher categories was to be suspended until June 20. Appeals for two Grade 1 men were disallowed, the men to be called up on June 20, and in several cases additional exemption for six months was granted

War Time Condition of London Tracks.—In reply to the Hendon Council's complaint about the unsatisfactory condition of the track in Edgware Road, the Metropolitan Electric Tramways Company admit that between Dollis Hill and the Hendon depot it is in need of repair, owing to the damage caused by heavy motor traffic. A claim has been made against the Government for the additional expense, but the company state that everything possible is being done to carry out urgent repairs. The Council disclaims all responsibility for any accident that might occur in consequence of the defective condition of the track.

Edinburgh to Queensferry Tramway.—*The Scotsman* states that sixteen petitions have been lodged against the application of Edinburgh Corporation for a provisional order to proceed with the construction of a tramway between Edinburgh and Queensferry. The petitions represent a large variety of interests, and a number have been lodged by public bodies. It was anticipated that the scheme would be unopposed, but the situation as now revealed showed that the opposition is gathering force. Almost any one of the sixteen petitions, it is stated, would involve elaborate procedure and extensive costs for counsel, and the cumulative effect would be a heavy bill of costs for the ratepayers.

Municipal Tramways Association.—A meeting of the executive Council of the Municipal Tramways Association was held on Thursday at the London County Council offices, Spring Gardens. Mr. Flint, president of the Council, presided and there was a full attendance. The object of the meeting was to consider further the action to be taken with regard to the application for a 12½ per cent. bonus which is to come before the Committee of Production shortly. A committee was appointed to consider and report on the probable effect of the proposals of the Central Power Supply Committee. The following are the members :—Messrs. A. L. C. Fell, Alfred Baker, R. Mayne, J. Dalrymple, J. M. McElroy, Samuel Flint, A. R. Fearnley, and C. J. Spencer.

War Bonus.—Over three hundred applications for the 12½ per cent. war bonus have been heard by the Committee on Production, and in every case, we believe, the award has been granted. Bolton Tramways Committee have received an application from the National Transport Workers Federation for 12½ per cent. increase on the existing total earnings of all employees, or for an increase on the standard wage equivalent to it, with equal payment for men and women both in war bonus and on basic rates. Several adjacent authorities have received similar applications. The War Bonus Committee at Leicester in a report to the Council have stated that the officials of the electric supply department are entitled, under the provisions of Sir George Askwith's award, to a war bonus, and 12½ per cent.

Municipal Corporations and the Whitley Report.—An item of business of special interest to tramways committees was transacted at the annual meeting of the Association of Municipal Corporations, which was held in the Guildhall, London, on May 31. The report of the Special Committee on the Whitley report was presented by Alderman Phillips, of Salford. The Committee recommended acceptance of the general principles of the report, and that a separate Industrial Council should be established for each industry, steps being taken to keep them in touch with one another, and to co-ordinate their decisions. The industries in regard to which separate Councils would be required would include tramways, gas, electricity, and water, and no doubt some others. The report was adopted, and a Special Committee was instructed to prepare a draft scheme for linking up the various industrial bodies with the municipality and for other purposes.

Industrial "Safety First" Campaign.—A conference will be held at the Mansion House on Wednesday, June 12, at 4 p.m., to inaugurate an industrial "Safety First" campaign in the United Kingdom. Lord Leverhulme will preside, and will speak on the subject of "Safety First" and its successful application at the Port Sunlight works of Lever Brothers, Ltd. He will be supported by the Lord Mayor, Mr. G. H. Roberts (Minister of Labour), Lord Aberconway, Mr. W. Joynson-Hicks, M.P., Mr. C. Duncan, M.P. Other prominent representatives of industry and labour will also speak. The gratifying success of the "Safety First" campaign, as conducted by the London Safety First Council in connection with certain railway and transportation companies, has focussed attention on the benefits which may be expected to accrue from a general extension of the movement. The success of the American "Safety First" movement is irrefutable, and statistics show that industrial and transportation casualties have in some towns been reduced by nearly 50 per cent. Applications for invitations to the conference should be addressed to the Hon. Secretaries, London "Safety First" Council, 31, Westminster Broadway, S.W.1.

PERSONAL.

Mr. T. R. Smith, chief electrical engineer at Leicester, has been granted an increase in salary from £900 to £1,000.

Mr. W. E. Owen has resigned his position as superintendent of the power station of Northampton Corporation tramways.

Mr. J. Barnard, general manager of the Bolton Corporation tramways, has been granted an increase in salary from £525 to £700 per annum.

Mr. T. O. Callender, managing director of Callenders' Cable and Construction Company, Ltd., has been knighted for active leadership in local patriotic work.

Mr. H. C. B. Underdown has been appointed president, and Mr. Bernard Caillard, vice-president, of the Association of British Motor and Allied Manufactures for the ensuing year.

Mr. R. L. Ferguson, of the motor branch of the Munitions Inland Transport, has been appointed chairman of the London Divisional Committee of the Road Transport Board.

Mr. Guy Calthrop is one of the new baronets included in the King's birthday honours. Formerly general manager of the London and North Western Railway, he has given valuable services as Controller of Coal Mines, and is head of the department of the Board of Trade which has control of the coal mines of the United Kingdom.

Mr. J. Cameron, general manager of Northampton Corporation tramways, reported to the Council that Mr. W. E. Owen, superintendent of the power station, had resigned. Before filling the position he was making application to the military authorities for the release of Mr. E. Jordan, former power station superintendent, who has been passed as fit for home service only.

Sergeant A. Oakley, Gloucester Regiment, who before enlisting in 1915 was a driver on Hull Corporation tramways, has been awarded the Belgian Croix de Guerre for gallantry. After being in France for sixteen months he was home on leave in February. Since returning to France he has been wounded and has been in hospital suffering from gas and shell shock.

Presentations to the King.—Two presentations to their Majesties the King and Queen which will be noted with interest were made during the royal visit to the textile industries at Leeds and Bradford on May 31. At the reception of the royal party at the Victoria Hall, Leeds, the members of the City Council presented included Alderman R. A. Smithson, chairman of the Tramways Committee. During the visit to the Phœnix Dynamo Manufacturing Company's works on the outskirts of Bradford, the members of the Bradford National Munitions Factory Board of Management were presented, including Mr. C. J. Spencer, general manager of the Corporation tramways of that city.

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Newcastle Corporation Tramways Committee, at a meeting on May 30, at which Councillor R. Mayne presided, recommended the City Council to increase the salary of Mr. Ernest Hatton, engineer and general manager, from £1,000 to £1,500 by five annual increments of £100. It was stated that the proposed arrangement had been arrived at after comparison of the salaries paid to similar officials in other large cities.

Mr. J. Wilkinson, tramways electrical engineer, of Hull, has reported to the Corporation Tramways Committee that he had received a letter from the Controller of Coal Mines appointing him district engineer in connection with the coal economy campaign. Owing, however, to the present state of his health he was unable to accept the post, and subject to the approval of the Committee he nominated Mr. R. G. Elliott.

Mr. James Dalrymple, general manager of Glasgow Corporation Tramways, has been recommended by a special committee for an increase of £200 in his salary of £1,300 per annum. Mr. Dalrymple is approaching the completion of his 37th year in the service of the Corporation, and his work in the tramways department, and for recruiting and war charities, has been very heavy during the war. In the use of women as car conductors, drivers, and cleaners he may be said to have taken the initiative in the United Kingdom.

Mr. Harrison Barrow, late chairman of the Birmingham Corporation Tramways Committee, has been sentenced to six months' imprisonment for an offence under the Government regulations for being a party, as acting chairman of the Friends' Service Committee, to the printing and publication of a pamphlet, "A Challenge to Militarism." The leaflet was issued without the name of the author, and no copy was submitted to the Press Bureau. Notice of appeal was given and Mr. Barrow was allowed bail.

Captain J. S. Hamilton, D.S.O., who was mentioned in General Haig's despatches published last week, is the second son of Mr. J. B. Hamilton, general manager of the Leeds City Tramways. Soon after the war broke out, Captain Hamilton left his technical work in the tramway department and volunteered as a private. Later he received a commission and was attached to the West Yorkshire Regiment, in which he has seen continuous service for many months. In December last he was awarded the D.S.O. for conspicuous gallantry.

Sapper A. Ramsden, 32nd Divisional Signal Co., R.E., attached to the 168th Brigade, R.F.A., has been awarded the Italian Bronze Medal for Military Valour, "for conspicuous fearlessness and exemplary determination in devotion to duty," in repairing telephone wires under very heavy shell fire and gas shell fire at Nieuport, on the Steenbeek, and near Bixschoote. "His consistent bravery in action" is stated to be "of high moral value to his unit." Before the war Sapper Ramsden was a driver on Huddersfield Corporation tramways.

Alderman Sir Charles Petrie, J.P., who has been created a baronet, is one of the most honoured and respected citizens of Liverpool. He has been a member of the City Council for over twenty-six years, and was chairman of the Tramways and Electric Power and Lighting Committee until about five years ago, being subsequently appointed chairman of the Finance Committee. It was during his chairmanship of the Tramways Committee that practically the whole of the reconstruction of the tramway system was carried out. He was elected Lord Mayor for the year 1901-2. Last year he was made a Freeman of the city and a presentation was made to him. Sir Charles is a vice-president of the Tramways and Light Railways Association, and a director of the Singapore Electric Tramways Company, Ltd.

FINANCIAL REPORTS AND MEETINGS.

Canadian General Electric Co.—A dividend has been declared of 2½ per cent. on the common stock for the three months to June 30.

Brazilian Traction, Light and Power Company.—A quarterly dividend of 1½ per cent. on the cumulative preference shares is to be paid on July 1.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended June 5 amounted to £67,068, an increase of £10,235 as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to June 5 (nine and a half weeks), the total receipts were £570,287, an increase of £58,633 on the corresponding period of 1917.

Bolton Corporation Tramways.—The accounts for the year ended March 31, 1918, and for the previous three years are briefly tabulated below:—

YEAR ENDED MARCH 31.	1918	1917	1916	1915
	£	£	£	£
Traffic revenue	176,786	151,847	140,948	140,182
Sundry revenue	600	1,084	1,142	1,228
Total	177,386	152,931	142,090	141,410
Traffic expenses	38,838	32,057	27,837	30,044
General expenses	11,286	10,475	9,069	9,084
Repairs and maintenance	30,191	19,342	16,910	15,912
National Insurance	295	286	307	402
Power expenses	21,921	20,922	19,466	20,689
Balance to net revenue	74,855	69,849	68,501	65,279
Car miles run	2,692,052	2,678,957	2,603,764	2,886,180
Traffic revenue per car mile	15·69d.	13·603d.	12,992d.	11·656d.
Passengers carried	39,581,828	34,477,902	31,839,150	31,370,166

Doulton and Co., Ltd.—After providing for debenture interest, and including £43,552 brought forward, the accounts show a credit balance of £68,703; out of which has been paid the preference share dividend for the year ended December 31, 1916, absorbing £17,500, leaving £51,203, to be carried forward.

Birmingham Traffic Increase.—Alderman A. G. Ellaway, in submitting the tramway accounts to the City Council, said that the Tramways Committee proposed to contribute £25,000 toward the rates. There has been an enormous traffic growth, both by tramways and omnibuses. For the first time the receipts exceeded a million pounds, and since the beginning of this year they had carried four million passengers every week. The weekly receipts averaged over £20,000. The expenditure had increased to even a greater extent. It was estimated that they were carrying the entire population of the city four and a half times per week, and the total was growing, despite the recent increase in fares.

London and Suburban Traction Company.—Presiding at the meeting on Wednesday, the Right Hon. Lord Stuart Wortley, chairman, after dealing with the accounts, which were summarised in our issue of June 1, said that the cause of the diminished net revenue was the ever growing cost of operation. Wages paid by the operating companies in their group, exclusive of the omnibus undertakings, which were worked for them by the London General Omnibus Company, amounted in 1913 to £330,000 and in 1917 to £403,500. They had to face a further diminution of revenue from the effect of the new Lighting, Heat and Power Order of 1918, which would curtail the consumption by private users of the current they had to sell. The tramways undertakings also would have to assist in securing economy in coal, which could be done only by reducing the services. They would have to do something or tramway fares would be raised. A more hopeful matter for the future was that the efforts to reduce wasteful competition between the tramways and the omnibuses of the London General Company were now much nearer realisation.

Manchester Corporation Tramways.—The following is a summary of the Manchester tramway results for the year ended March 31, 1918, and the three preceding years:—

YEAR ENDED MARCH 31.	1918	1917	1916	1915
	£	£	£	£
Traffic revenue	1,108,165	965,829	925,301	887,762
Miscellaneous	9,811	9,809	9,680	9,687
Motor omnibuses	1,563	158	1,083	786
Parcels	323	2,881	3,405	3,639
Total	1,119,862	978,677	939,469	901,875
Traffic expenses	282,550	275,282	261,689	273,002
General expenses	89,615	89,823	88,052	85,809
Repairs and maintenance	109,155	96,114	81,755	85,280
Power expenses	148,899	137,523	129,941	128,350
War service allowances	156,936	91,023	92,808	31,703
Balance to net revenue	332,706	288,910	285,222	297,670
Car miles run	18,540,585	18,338,302	18,486,440	19,155,051
Revenue per car mile	14·496d.	12·773d.	12·197d.	11·3d.
Passengers carried	240,914,369	219,151,984	209,877,667	202,768,420

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

Dividends Prev.	Dividends Last.	Name.	Paid.	Price, July 27, 1914.	Cash June 6 or previous.	A Week Ago.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	67⅞	66⅞
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅞	60/-	58/9
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4⅞	48/9	48/9
4%	4%	Do. 4% Deb.	100	91	72	72
4½%	4½%	Do. 4½% Deb.	100	98½	66½	68
5%	5%	Do. 5% Deb.	100	96	63	62½
—	—	Associated Omnibus Co., Ord. ..	5/-	3/8	1/2	1/2
1/-	6d.	Auckland Elec. Trams. Ord. ..	1	1 3/16	20/4½	20/4½
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	110½	110
—	1/-	Bath Electric Trams Pref. Ord.	1	½	3/6	3/6
6d.	6d.	Do. 5% Cum. Pref. ..	1	3/8	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67¾	67¾
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	72½	72½
20/-*	28/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Do. 6% Cum. Pref. ..	10	11⅛	9 3/16	9 3/16
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	41½	43½
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	86¾	85½
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5⅜	5⅜
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	78/9	78/9
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91	91
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	35	33½
6%	5%	Do. Pref. Ord.	100	106	42½	42
5%	5%	Do. 5% Cum. Pref. ..	100	103	61	60
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	83½	83½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	62½	63½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	32	31½
6%	6%	Do. 6% Cum. Part. Pref.	100	—	74	74
5%	5%	Do. 5% Deb.	100	92	77⅞	77⅞
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	63½	63½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	77½	77½
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	6½	6½
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	79/0½	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1	1/16	12/9	12/9
1/3	1/3	City of B. A. Trams	5	5⅛	82/-	81/-
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	80½	82
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	57⅛	57⅛
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 3/16	7 3/16
6/-	6/-	Do. 6% Pref.	10	12	10 5/16	10 5/16
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/3	1/3
1/2½*	1/2½*	Do. 6% Cum. Pref. ..	1	1/16	10/3	10/3
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
5½d.	8½d.	Hong Kong Tramway	5/-	1/16	19/6	17/9
5%	5%	Do. 5% Deb.	100	87½	76½	76½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	½	2/4½	2/4½
9/6	9/6	Lanarkshire Trams Co. ..	10	10½	10 3/16	10 3/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	69½	69½
9½d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	1/16	2/4½	2/4½
6d.	6d.	Do. 5% Pref.	1	1/16	6/10½	6/6
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	60	60
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	82	81½
5%	5%	Do. 5% Inc. Deb.	100	88½	76	76
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	36½	35½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	82/6	82/6
5%	5%	Do. 5% Deb.	100	100	84½	84½
7½d.*	9½d.*	Manaos Trams & Ltg. Ord. ..	1	1/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	68	68
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	74½	74½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	69	69
5%	5%	Do. 5% Deb.	100	87	76½	76½
$1½	$1½	Mexico Trams. Common ..	$100	70	28	24
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	36	38
—	—	Do. 6% Mt. Bds. ..	100	76	30	30
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	93½	93½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	91	91
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	1/32	17/-	16/6
9½d.*	9½d.*	New General Traction	1	⅛	7/1½	7/1½
6d.	8½d.	Northern Gen. Trans. Ord. ..	1	3/16	12/9½	12/9½
3/-	4/-	Para Elec. Rlys. Ord.	5	4½	78/9	78/9
5%	5%	Do. 5% 1st Deb. ..	100	89½	74½	74½
—	—	Pernambuco Tram. & Power Ord	1	—	8/3	8/-
—	—	Do. 7% Non. Cm. Part Pf.	1	—	14/3	14/-
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
7½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1	1/16	6/9	6/9
6d.	6d.	Do. 5% Pref.	1	1/16	12/6	12/6
2d.	1/4	Provincial Trams. Ord. ..	1	⅛	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	89	88½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	74½	73
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	86	85½
5%	5%	Do. 5% Perp. Deb. ..	100	99½	70	70
12/-	10/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/6½	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	94	94
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	78	78
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	35/-	35/-
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	57	57⅛
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅛	23/3	18/4½
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅛	84/7½	84/7½
4½%	4½%	Do. 4½% 1st Deb.	100	85½	72½	72½
—	—	Metropolitan Dist. Ord. ..	100	21¾	15⅞	15
—	—	Undgd. Elec. Rys. of London ..	10	21½	34/9	34/4½
		Do. "A"	1/-		4/9	4/9
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	104⅞	104⅝
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	99½	99½
6%	6%	Do. 6% In. Bonds Rd. ..	—	88½	76½	76½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AN OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C.	May 28	557	523	— 34	8	4,288	..
Aberdeen Corporation	,, 31	2,435	3,396	+ 961	52	115,057	+ 16,540
Ayr Corporation	June 1	370	519	+ 149	2	1,322	+ 343
Belfast City	May 31	6,239	7,732	+ 1,493	9	69,067	+ 16,415
Birkenhead Corporation	June 1	1,929	2,251	+ 322	9	18,959	+ 3,753
Blackburn	May 27	1,336	2,954	+ 1,618	8⅔	15,295	+ 5,102
Bradford Corporation ..	June 1	10,048	8 4 3	— 1,565	9	71,407	+ 4 901
Burnley Corporation ..	,, 1	2,299	2 235	— 64	..	..	..
Burton-on-Trent Cor. ..	,, 2	320	4 0	+ 80	9	3,581	+ 1,088
Bury Corporation ..	,, 2	2,059	2,6 9	+ 550	9	18,104	+ 3,580
Chatham & District ..	May 30	1,770	1,321	— 449	22	25,859	+ 259
Cork Electric	,, 30	623	736	+ 113	22	12,857	+ 2,284
Derby Corporation ..	June 1	1,414	1,535	+ 121	9	13,308	+ 3,110
Dundee City	May 29	1,530	1,939	+ 409	2	3,905	+ 948
East Ham Corporation ..	June 1	1,630	1,491	— 139	8⅔	12,464	— 97
Exeter Corporation ..	Mar. 22	302	373	+ 71	51	20,106	+ 301
Glasgow Corporation ..	June 1	27,539	31,072	+ 3,533	½	6,828	+ 3,262
Glossop (U.E. Sup. Co.) ..	,, 1	199	212	+ 13	22	4,026	+ 1,066
Halifax Corporation ..	May 28	3,914	2,904	+ 1,010	8⅔	23,023	+ 3,045
do. Motor Buses ..	,, 28	66	61	— 5	8⅔	507	+ 125
Huddersfield Corporation	June 1	4,834	3,864	— 970	9	33,932	+ 3,365
Ilford U.D. Council ..	,, 1	956	998	+ 42	9	8,684	+ 2,169
Ipswich Corporation ..	,, 1	905	764	— 141	9	6,473	+ 1,478
Isle of Thanet	,, 1	492	285	— 207	35	6,813	— 2,366
Kilmarnock Corporation ..	,, 1	180	223	+ 43	2⅔	597	+ 137
Lanarkshire	May 30	2,923	3,710	+ 787	22	72,292	+ 17,626
Lancashire United ..	,, 29	3,063	3,912	+ 849	22	59,880	+ 18,108
Leeds City	June 1	14,354	12,415	— 1,939	9	106,496	+ 12,034
Leicester Corporation ..	,, 1	4,604	4,612	+ 8	..	..	..
Leyton U.D. Council ..	May 30	2,376	2,113	— 263	9	18,316	+ 1,314
Liverpool Corporation ..	,, 25	15,746	21,233	+ 5,487	20⅔	355,895	+ 57,290
Llandudno & Colwyn Bay	,, 24	277	628	+ 351	25	7,305	+ 2,109
London County Council ..	June 5	56,833	67,068	+ 10,235	9⅓	570,287	+ 58,633
Maidstone Corporation ..	May 30	291	254	— 37	8⅓	2,464	+ 446
Manchester Corporation	June 1	23,553	27,560	+ 4,007	9	226,192	+ 46,672
Newcastle-on-Tyne Cor.	,, 1	8,579	9,219	+ 640	9	80,203	+ 15,039
New St. Helens & Dist. ..	May 29	2,072	1,935	— 137	48	69,244	+ 16,546
Northampton Cor. ..	,, 31	1,048	826	— 222	9	7,967	+ 1,060
Nottingham Corporation	,, 30	5,592	5,881	+ 219	9	49,111	+ 12,781
Oldham Corporation ..	June 2	3,168	4,272	+ 1,104	10	34,745	+ 7,667
Reading Corporation ..	May 30	1,198	1,302	+ 104	9	10,755	..
Rhondda Tramways ..	,, 16	1,495	1,688	+ 193	20	32,080	+ 5,512
Rotherham Corporation	June 5	1,782	2,111	+ 329	9⅔	20,151	+ 3,680
Sheffield Corporation ..	,, 2	12,966	13,943	+ 977	9⅔	133,281	+ 19,744
Southampton Cor. ..	May 29	2,195	2,468	+ 273	8⅔	21,023	+ 5,574
Southend-on-Sea Cor. ..	,, 29	1,423	963	— 460	9	7,551	— 323
South Shields Cor. ..	,, 18	879	1,116	+ 237	7	7,359	+ 1,558
Sunderland Corporation ..	June 1	2,132	2,089	— 44	9	19,000	+ 3,540
Sunderland District ..	May 8	669	870	+ 201	27	23,094	+ 6,045
Swindon Corporation	,, 29	327	280	— 47	8⅔	2,544	+ 448
Torquay Tramways	,, 16	576	751	+ 175	20	14,047	+ 4,450
Tyneside Trys. & Trmrds.	,, 22	819	1,781	+ 962	21	18,910	+ 5,355
Wallasey Corporation	June 1	1,853	1,934	+ 81	8⅔	15,756	+ 3,152
Walsall Corporation ..	,, 1	1,305	1,154	— 151	9	10,985	+ 2,566
Walthamstow U.D. Coun.	,, 1	1,759	1,552	— 207	9	12,656	+ 1,808
Warrington Corporation	May 16	512	712	+ 200	7	4,792	+ 1,564
West Ham Corporation	,, 30	4,323	4,183	— 140	8⅔	35,579	+ 3,560
Wigan Corporation ..	,, 30	2,457	2,246	— 211	9	21,109	+ 4,737
Yorkshire (West Riding)	,, 19	1,902	3,007	+ 1,105	20	48,864	+ 11,359

TRAFFIC RETURNS SUSPENDED.

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Birmingham, Blackpool, Blackpool and Fleetwood, Bolton, Bournemouth, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Dublin United, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Nelson, Newport (Mon.), Portsmouth, Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation.

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	June 3	£51,765	£55,495	22	£1,217,924	+ £85,335
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Feb. 24	3,196	3,902	48	40,644	+ 1,316
Brazilian Traction (Mlrs.)	Apr.	7,453,000	8,330,000	17	31,576,000	+ 2,436,000
Brisbane	Apr.	31,620	35,530	17	137,569	+ 9,789
British Columbia .. $	Apr.	447,429	515,417	43	5,010,688	+ 496,254
Buenos Aires Lacroze ..	Apr.	39,111	41,643	43	388,064	+ 2,601
Burmah Tram. & Light Rs.	Apr.	23,660	27,614	39	239,756	+ 4,945
Calcutta .. .. Rs.	June 1	64,567	70,548	22	1,568,869	+ 107,315
Cape Town	Apr.	16,705	19,011	..	..	..
Carthagena and Herrerias	May	4,321	5,027	21	22,585	+ 2,738
Cordoba	Feb.	11,896	12,972	47	147,938	+ 435
East India	Apr.	1,445	1,791	39	12,287	— 5,398
Hong Kong .. .. $	Apr. 6	13,142	13,111	14	191,668	+ 2,605
Kalgoorlie	Jan.	2,431	2,522	4	2,522	+ 91
La Plata	May	4,127	5,105	21	25,078	+ 3,786
Lima	Apr.	37,834	43,557	17	171,112	+ 24,623
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	May 31	33,405	41,152	21	403,879	+ 60,107
Manaos .. .. Rs.	Feb.	144,532	133,591	8	285,462	+ 5,563
Manila (8 weeks) .. $	Feb. 28	73,200	93,000	8	93,000	+ 19,800
Montevideo	May	28,716	32,301	26	238,338	+ 23,000
Pernambuco	May 26	3,589	4,300	21	95,691	+ 20,196
Peruvian .. .. $	May	902,780	1,022,120	48	11,424,560	+ 1,261,888
Port Elizabeth	Apr.	3,904	4,028	..	..	..
Rangoon	Apr.	5,036	5,885	17	22,863	+ 2,363
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Apr. 13	13,131	14,260	15	202,259	+ 2,871
Toronto .. .. $	Apr.	970,367	1,065,766	17	4,229,490	+ 332 895
Winnipeg .. .. $	Apr.	265 594	296,433	17	1,237,263	+ 77,913

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TRAMWAY TRACK CONSTRUCTION AND MAINTENANCE.

By R. BICKERSTAFFE HOLT,

Highways and Permanent Way Engineer, City of Leeds.

CONTENTS:

FOREWORD.
What's wrong with the Track?"

CHAPTER I.—CONCRETE FOUNDATIONS.
Defects—Causes of fracture—Method of laying concrete.

CHAPTER II.—CONCRETE MATERIALS.
Road metal—Water-gravel—Sand—Clinker-sand—Trass.

CHAPTER III.—REPAIRS TO CONCRETE FOUNDATIONS.
Patching—Partial repairs—Complete renewal.

CHAPTER IV.—TRACK DESIGN.
"Follow my leader" policy—Importance of local conditions—Effect on sub-soil—Standard methods—Transverse sleeper tracks—Effect of vehicular traffic and tramway car traffic.

CHAPTER V.—RAIL PACKING.
Pitch and tar packing—Materials—Testing and preparation of materials—Prepared tar—Pitch mixtures—Movement of rails—Packing and floating.

CHAPTER VI.—RAIL LAYING.
Bad rail packing—Rails canted or twisted—Anchoring and Padding—Rail expansion and contraction—Curving of rails—Springing of rails—Anchoring tracks.

CHAPTER VII.—JOINTS, FISH PLATES, BOLTS AND NUTS
Why joints fail—Dished or hammered joints—Movement at joints.

CHAPTER VIII.—JOINT WELDING.
Methods of welding—Thermit welding—Electric arc welding process—Expansion and contraction—Oxy-acetylene process.

CHAPTER IX.—RAIL WEAR.
At joints—On new tracks—On steep gradients—On wheel tires—Contact of wheel and tire—Leeds special rail section—Railway rails—Depression of check.

CHAPTER X.—COMPOSITION AND MANUFACTURE OF TRAMWAY RAILS AND RAIL WEAR.
Defective rails—Composition of rails—Standard specification—Basic and acid Bessemer process—Sandberg process—Analysis of rails and rail tests—Drop test unnecessary.

CHAPTER XI.—CORROSION OF TRAMWAY RAILS.
Causes of rail corrosion—Exposure to sea water—Effect of corrosive liquid.

CHAPTER XII.—TRACK PAVING.
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CHAPTER XIII.—RECONSTRUCTION.
Removal of tracks—Temporary tracks.

CHAPTER XIV—SURFACE DRAINAGE AND RAIL MAINTENANCE.
Rail cleaning—Rail grinding—Rail planing.

CHAPTER XV—SPECIAL TRACK WORK.
Design and standardisation of points—Unbroken main line crossings—Renewable plates—Switches—Mechanism for movable points—Heel pins—Tongue heel adjusters—Guard rails—Spiral tables for curves and junctions—Special track problems.

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THE Tramway & Railway World
WITH MOTOR TRAFFIC SECTION

Founded 1892. LONDON, JUNE 13, 1918. VOL. XLIII.

ADELAIDE MUNICIPAL TRAMWAYS.

FULL AND ILLUSTRATED DESCRIPTION OF AN IMPORTANT AUSTRALIAN UNDERTAKING.

By the courtesy of Mr. W. G. T. Goodman, general manager and engineer of the Adelaide Municipal Tramways Trust, we are enabled to publish an illustrated account of the undertaking over which he has presided since its inception in 1907. Horse tramways were first opened in the city in 1887, and it was not until 1909 that the first lines were electrified. Since then other routes have been opened from time to time, and the system now comprises a total length of 106 miles of track. The undertaking is thus one of the most extensive of the Australian tramway systems, while its equipment, as will be seen from the following account, is of modern design, and includes many interesting features.

Adelaide Municipal Tramways Trust, which is responsible for the undertaking, consists of eight members, two representing the Government, two the Corporation of Adelaide, two the adjacent suburban Corporations, and two the District Councils included in the area within a ten-mile radius from the centre of the city. The council's representatives are elected by the respective councils, and hold office for a period of six years. The Trust, which was constituted in February, 1907, was endowed with powers to construct and operate tramways and to purchase existing tramways. At the time of its formation there were seven horse tramway undertakings in Adelaide and its suburbs, and these were immediately bought by

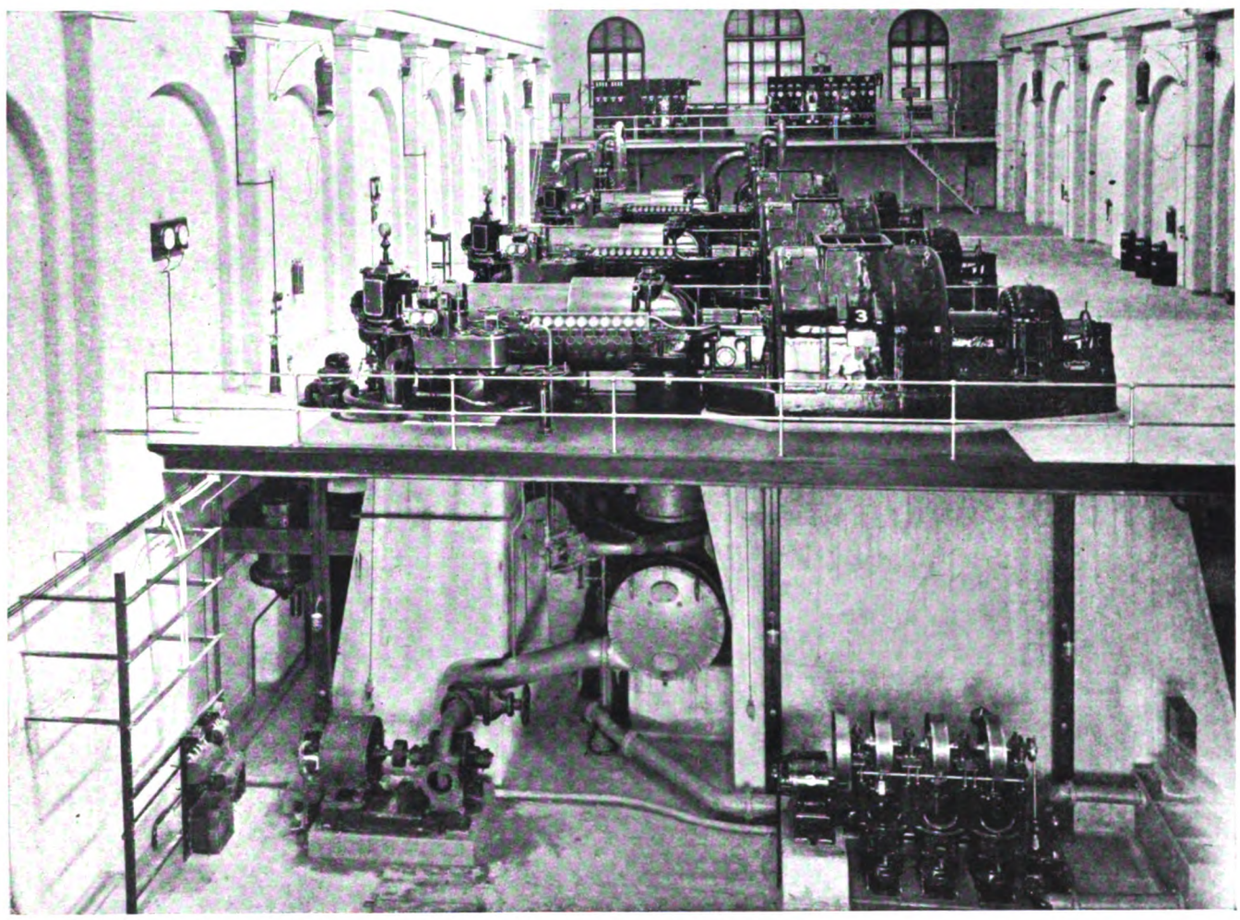

Fig. 1.—Interior of Engine and Dynamo Room.

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the Trust for the sum of £284,000. The Government of South Australia lent the money for the purchase of the horse tramways and for the cost of reconstruction, the loan to be repaid in annual instalments at the rate of one-thirtieth of the total amount. Of the capital liability one-third is borne by the City of Adelaide, one-third by the suburban Corporations, and one-third by the District Councils. Any deficit is to be made good by levies on the respective assessments of the Corporation at the time of the passing of the Act. When the loan has been repaid the Government will cease to be represented on the Trust.

When the Trust was first formed the members appointed by Government were Mr. A. B. Moncrieff, C.M.G., M.Inst.C.E., chairman, and Mr. T. Gill, C.M.G., I.S.O.; by the City and Corporation of Adelaide, Messrs. Theo. Bruce and J. R. Baker; by the suburban Corporations Messrs. R. Cruickshank and H. J. Holden; and by the District Councils Messrs. J. T. Mellor and A. C. Saunders. The first duty of the Trust was to co-ordinate the management of the seven horse tramways until the lines were electrified. They then appointed Mr. W. G. T. Goodman, M.Inst.C.E., as chief engineer, and entrusted to him the design of the electrification scheme for the whole undertaking. Plans and specifications were completed with the least possible delay, and the work proceeded so rapidly that the first electric section was opened on March 9, 1909. Other sections followed in quick succession, and the last of the horse cars in Adelaide were replaced by electric cars in 1914. A small horse tramway system at Port Adelaide was purchased in 1914, and early the following year its electrification was completed. This addition brought the total length of track, most of which is double, as mentioned above, to 106 miles.

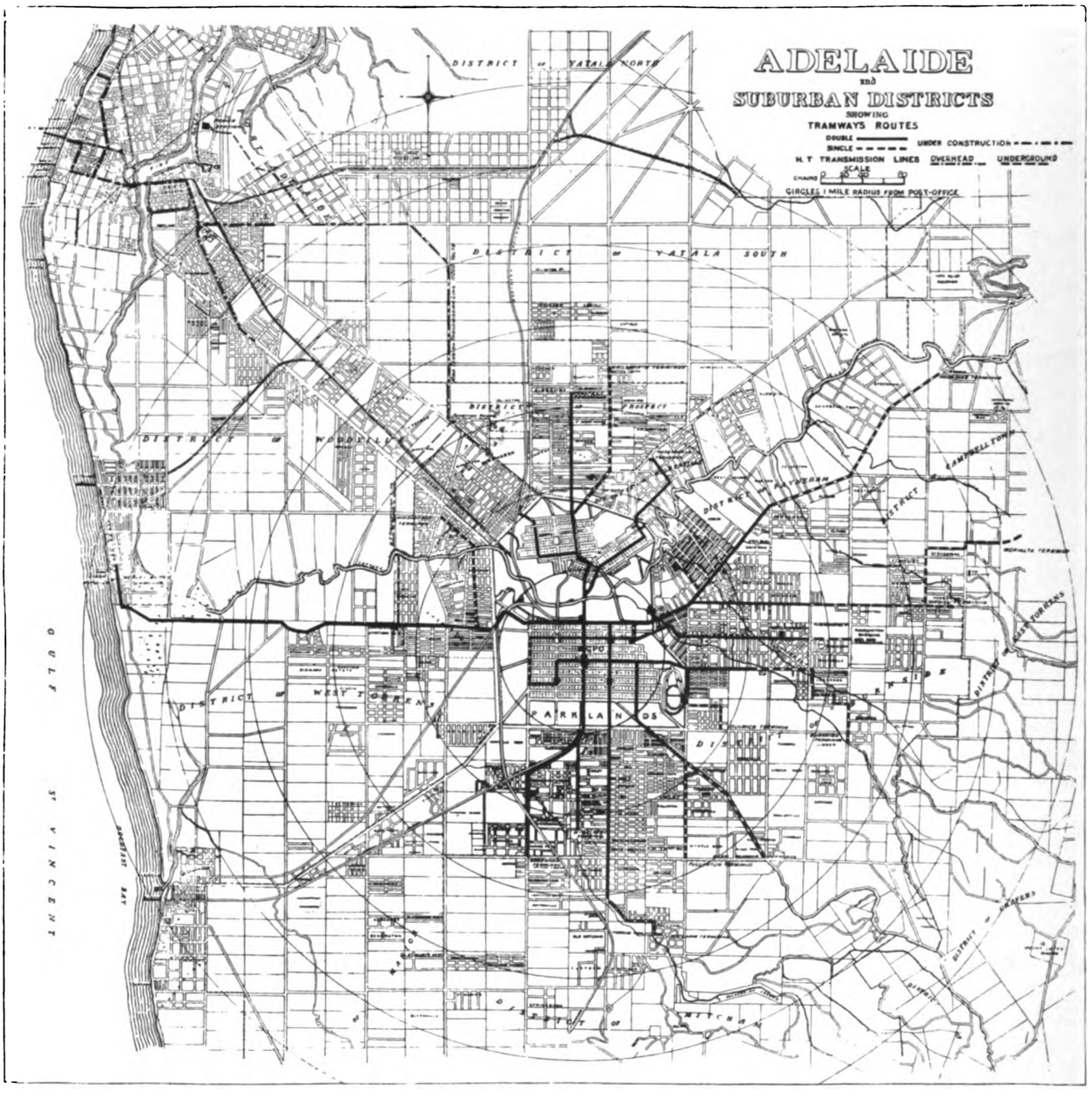

Fig. 2. -Map of Adelaide Tramways.

The general plan of the tramways of the Adelaide Trust can be gathered from the accompanying map (Fig. 2). It will be noticed that several long suburban lines are a considerable feature. The principal suburban route is that to Henley Beach, situated on the estuary of St. Vincent Gulf, about seven miles westward of the city. The routes are generally

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level, for the city is built on a large plain, although walled on the southern and northern sides by the Mt. Lofty range of mountains. The city proper is enclosed by a wide belt of park lands. The streets are broad and well laid out, expecially in Adelaide proper, where they cross each other at right angles, and are planted with trees.

The permanent way is of substantial construction. In the city, where the road surface is paved with wood blocks, the rails are laid on Jarrah sleepers, under which there is a 6-in. bed of concrete. This is brought up between the sleepers flush with their top, and

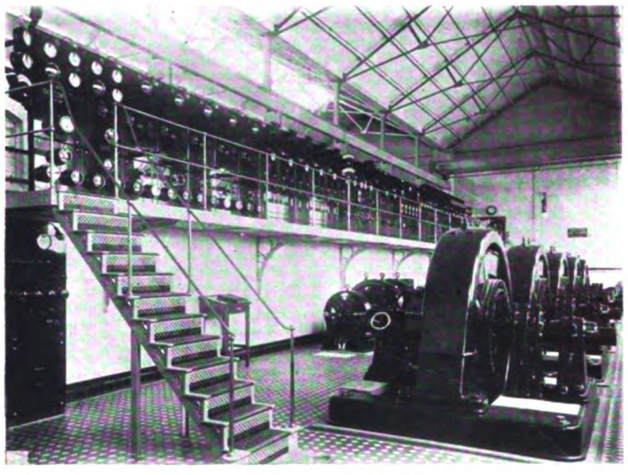

Fig. 3.—Interior of Converter Station.

packed under the rails. The surface is then paved with tarred blocks 6 in. deep. On the main portion of the track macadam formation has been adopted, the rails being laid on Jarrah sleepers 7 ft. 9 in. by 9 in. by 4½ in. Underneath the sleepers a layer of 2½-in. metal ballast is rolled in solid and packed, and ballast with binding is packed in between the sleepers under the rails, and rolled to an even surface. After the macadam is thoroughly consolidated, it is tarred periodically. The rails are of Sandberg's high-silicon steel British No. 2 standard section, weighing 95 lb. per yard. Most of the rail-joints have been welded by the Thermit process. Other joints were formed by electrically welding the fish plates to the rails along the top and bottom edges. No expansion joints are provided. The special work at the junctions was supplied by Messrs. Edgar Allen and Company, Hadfields, Limited, and the Lorain Steel Company.

The overhead construction is substantially designed, steel tubular poles being generally used. The feeder system is partly underground and partly overhead. Practically the whole of it was carried out by the British Insulated and Helsby Cables, Limited.

All the car bodies for the single truck cars were constructed by Messrs. Duncan and Fraser, of Adelaide, and the car bodies for the double track cars by Messrs. Pengelly and Company, of Adelaide, on behalf of Messrs. Noyes Brothers.

The generating station, which has been in operation for eight years, is situated at Port Adelaide, ten miles from the larger of the two converter stations. A general view of the engine-room is given in Fig. 1. The equipment consists of three 1,500-KW. Parsons turbo-alternators, generating current at 11,000 volts. The switchboard, as shown in the photograph, is placed at the end of the engine-room on a gallery, and is equipped with Reyrolle gear for the high tension portion. The boiler-house contains six Babcock and Wilcox boilers, with chain-grate stokers and all modern appliances.

The current is transmitted to Adelaide for a distance of eight miles by overhead lines, and thence underground by three-core cables to No. 1 converter station. The equipment of this station, as will be seen from Fig. 3, consists of five 500-KW. rotary converters, switchboard, &c. One converter has been removed to No. 2 converter station, and replaced by a 1,500-KW. machine. A view of the transformer-room at the rear of the machine-room at No. 1 converter station is given in Fig. 4, which shows the transformers, the back of the switchboard, low tension bus-bars, etc. A buffer battery of 1,000 ampere hours capacity is located at the rear of the transformer-room. A second converter station is situated four miles from No. 1, and this is equipped with one 500-KW., one 300-KW., and two 150-KW. rotary converters with a 500 ampere hour battery. A third sub-station is located at the power station at Port Adelaide, and is equipped with two 500-KW. rotaries, etc.

The car depot, workshops, and offices are laid out on a site of approximately ten acres, about a mile from the centre of the city, and adjacent to the Botanical Gardens, which cover more than 120 acres of ground. As will be seen from the plan of the site (Fig. 5), the car depot has 24 tracks, and is constructed with four bays, each 285 ft. by 73 ft. (Fig. 6). These bays are separated from each other by reinforced concrete walls in order to limit the risk of damage by fire to 25 per cent. of the rolling stock. Adjoining bay A is the accommodation block, containing at the front end (Fig. 5) accommodation for offices for marshals and inspectors, and a large mess-room 74 ft. by 30 ft. for motormen and conductors. This room, which is shown in Fig. 8, is fitted with tables and lockers, gas oven, and hot-water apparatus, etc. At its rear is a large lavatory, fitted with hand basins, shower bath, etc.

Adjacent to this apartment is a club-room (Fig. 9),

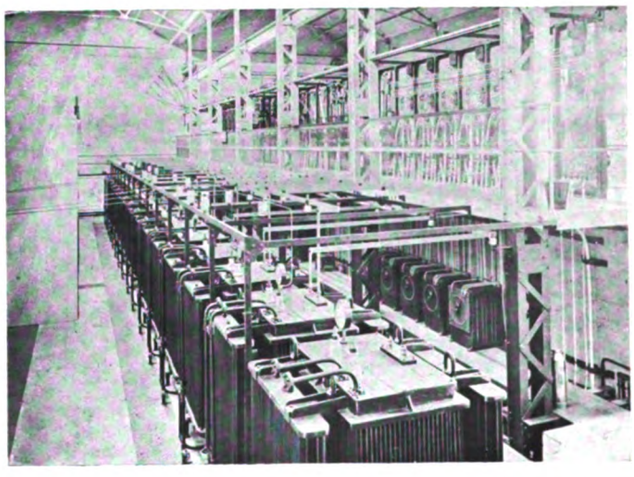

Fig. 4.—Transformer Room in Converter Station.

74 ft. by 50 ft., containing three billiard tables, reading tables, and a large library for members of the Tramways Club, membership in which, by the decision of the employees, is compulsory. The subscription is deducted from the pay, and is 4½d. per week, 3d. being set apart for sick and accident benefits, and 1½d. per week for social benefits and the upkeep of the club-room. The total amount of the subscriptions is subsidised, pound for pound, by the Trust. The total membership is nearly 1,000.

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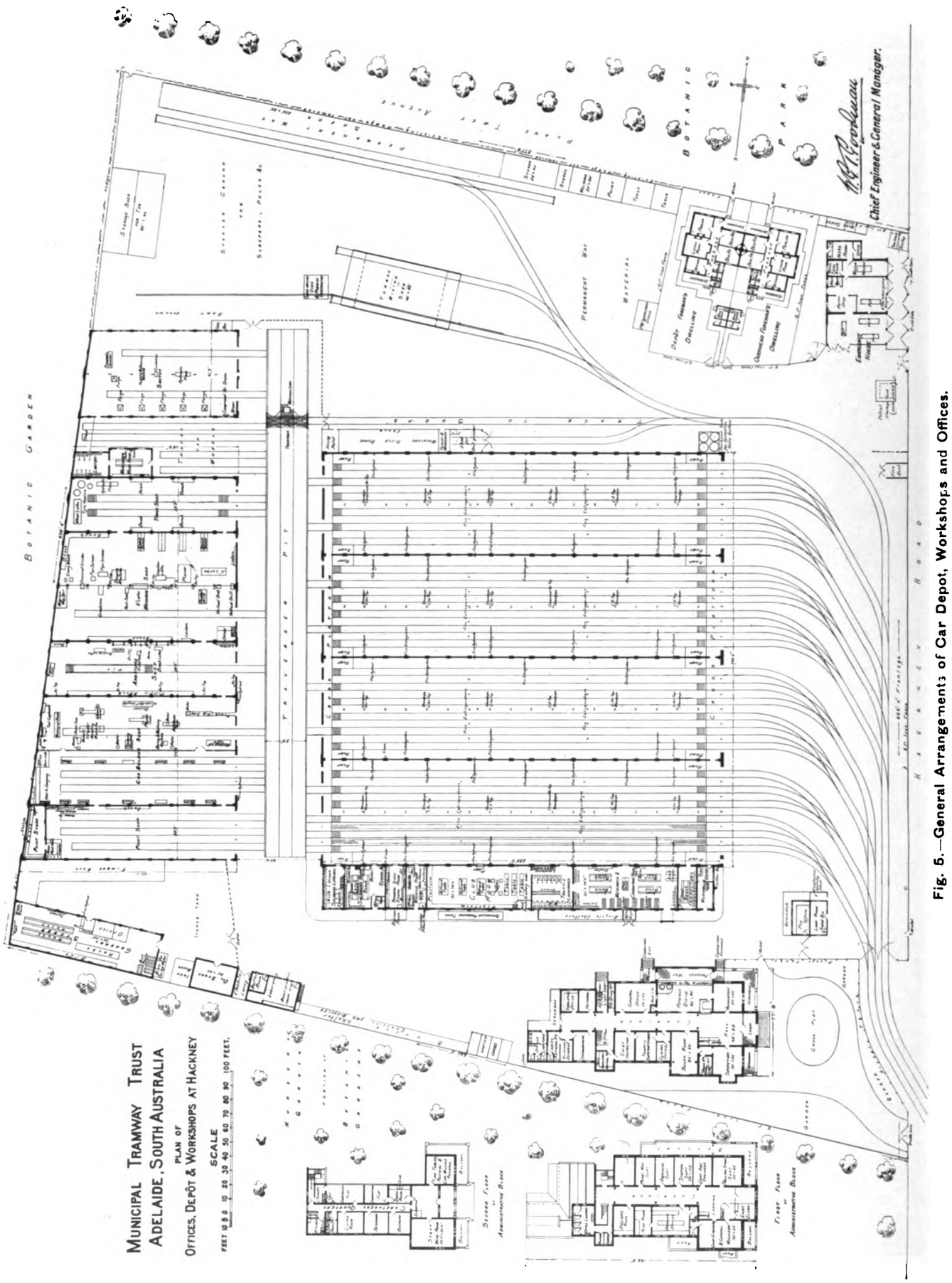
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Lamp Store
Lamp Yard
Oil Store
Oil Bunker
Grease Store
Grease Bunker
Cleaning Shed
Cleaning Pit
Repair Shop
Repair Pit
Inspection Pit
Traverser
Traverser Pit
Car Shed
Car Siding
Car Stabling
Car Stabling Pit
Car Repair Shop
Car Repair Pit
Car Lifting Jack
Car Lifting Pit
Car Washing Shed
Car Washing Pit
Car Painting Shop
Car Painting Pit
Car Trimming Shop
Car Trimming Pit
Car Lavatory
Car Store
Car Store Room
Car Store Yard
Car Office
Car Inspector's Office
Car Time Office
Car Waiting Room
Car Lamp Room
Car Lamp Store
Car Lamp Yard
Car Oil Store
Car Oil Bunker
Car Grease Store
Car Grease Bunker
Car Cleaning Shed
Car Cleaning Pit
Car Repair Shop
Car Repair Pit
Car Inspection Pit
Car Traverser
Car

Beyond the club-room are the machine-room, running shed, store-room, and shed-men's room. The machine-room contains motor generators, air compressors, etc. At the rear of the car shed is the traverser pit, giving access to the workshops beyond. An avenue 60 ft. in width separates the shed from the workshop, and the traverser pit extends the full length of this avenue, so that a car may be easily transferred from any bay of the depot to any shop, or from one shop to another.

Fig. 6.—Front View of the Car Depot.

The shops are placed in the following order, beginning at the left (Fig. 5)—paint shop, car-building shop, armature shop, machine shop, truck shop, wheel store, and smithy. The paint shop measures 150 ft. by 38 ft. 3 in., and is provided with three tracks. At the end of the tracks is a paint store, with paint mills, etc.

The car-building shop (Figs. 5 and 10) measures 77 ft. 6 in. by 140 ft. This is provided with four tracks, and is equipped with all the necessary woodworking machinery. This shop leads into the armature shop, which is 38 ft. 9 in. wide by 155 ft. deep. It contains one track with pit, and is equipped with the apparatus required for armature winding, repairs etc. Adjoining is the machine shop, shown in Fig. 11, which is 77 ft. 6 in. wide by 125 ft. deep. One track leads into this shop. The truck shop, 38 ft. wide by 120 ft. deep, is placed next to the machine shop; it contains two tracks, wheel lathe, wheel press, tire heater, etc. At the rear of the truck shop is a mess-room and lavatory for the workshop hands. An open space between the truck shop and smithy is provided with four tracks, and is utilised for storing wheels, etc. The smithy measures 61 ft. by 105 ft., and is equipped with six forges, punching and shearing machines, pneumatic hammer, etc. All the shops are equipped with 5-ton overhead cranes.

Fig. 7.—Administrative Building.

The administrative building (Fig. 7) is situated at the south-eastern corner of the site, as shown in Fig. 5. On the ground floor on the northern side is the accountant's office, revenue and general offices, uniform stores, and tabulating office. On the southern side are the secretary's office, board-room, offices for traffic superintendent, claims officer, chief inspector, employees' waiting-room, stenographers' office, telephone exchange, etc. On the first floor to the right are the offices for the rolling stock superintendent, chief assistant engineer, station superintendent, overhead superintendent, and permanent way superintendent.

To the left are the chief engineer and general manager's office, chief clerk's office, drawing office, plan-room, record-room, etc., while on the second floor are

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Fig. 8.—General View of Mess Room.

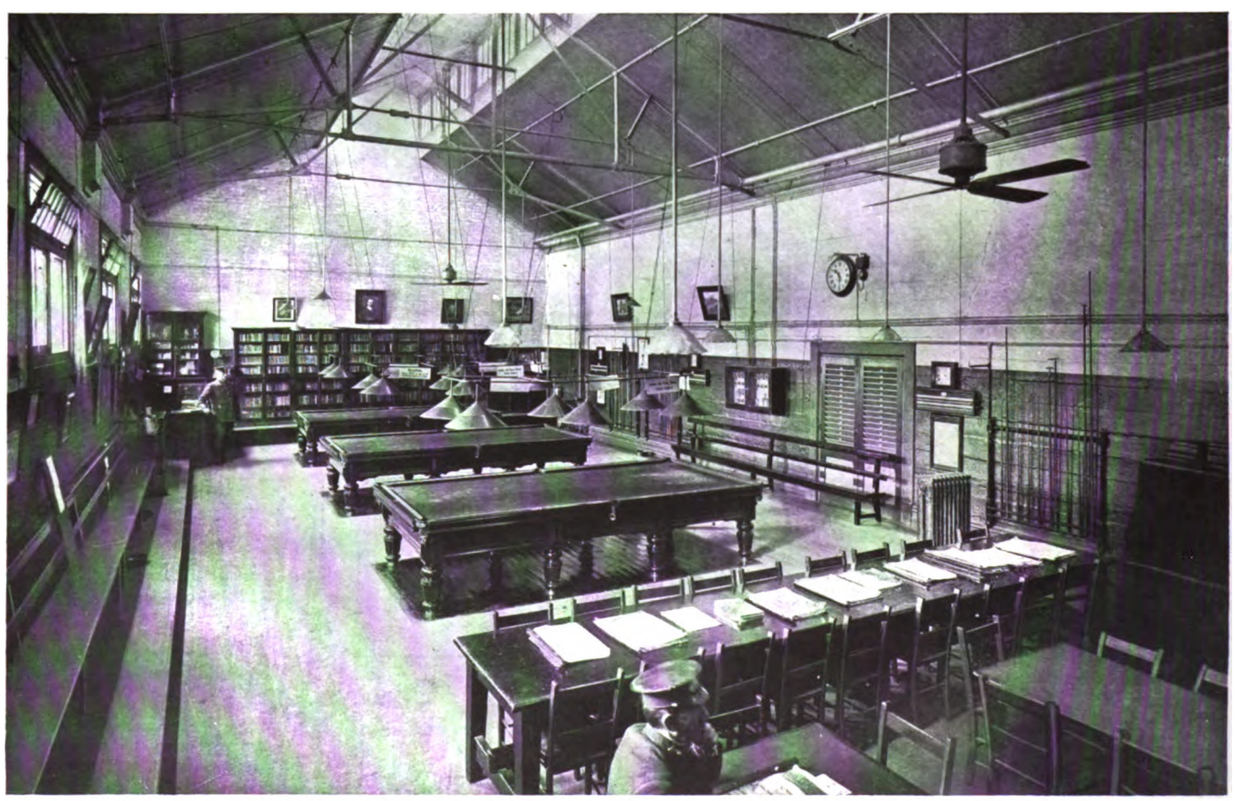

Fig. 9.—The Club Room.

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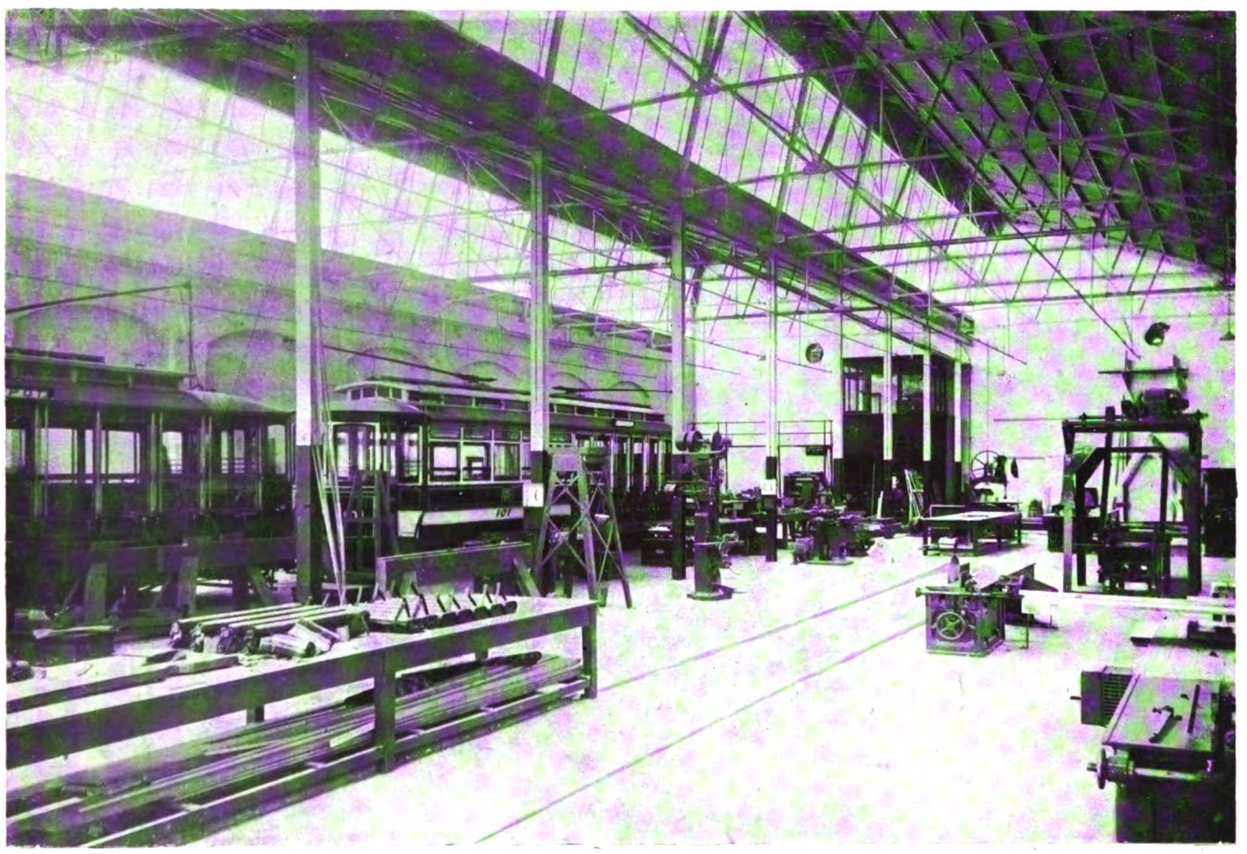

Fig. 10.—Car-Building Shop.

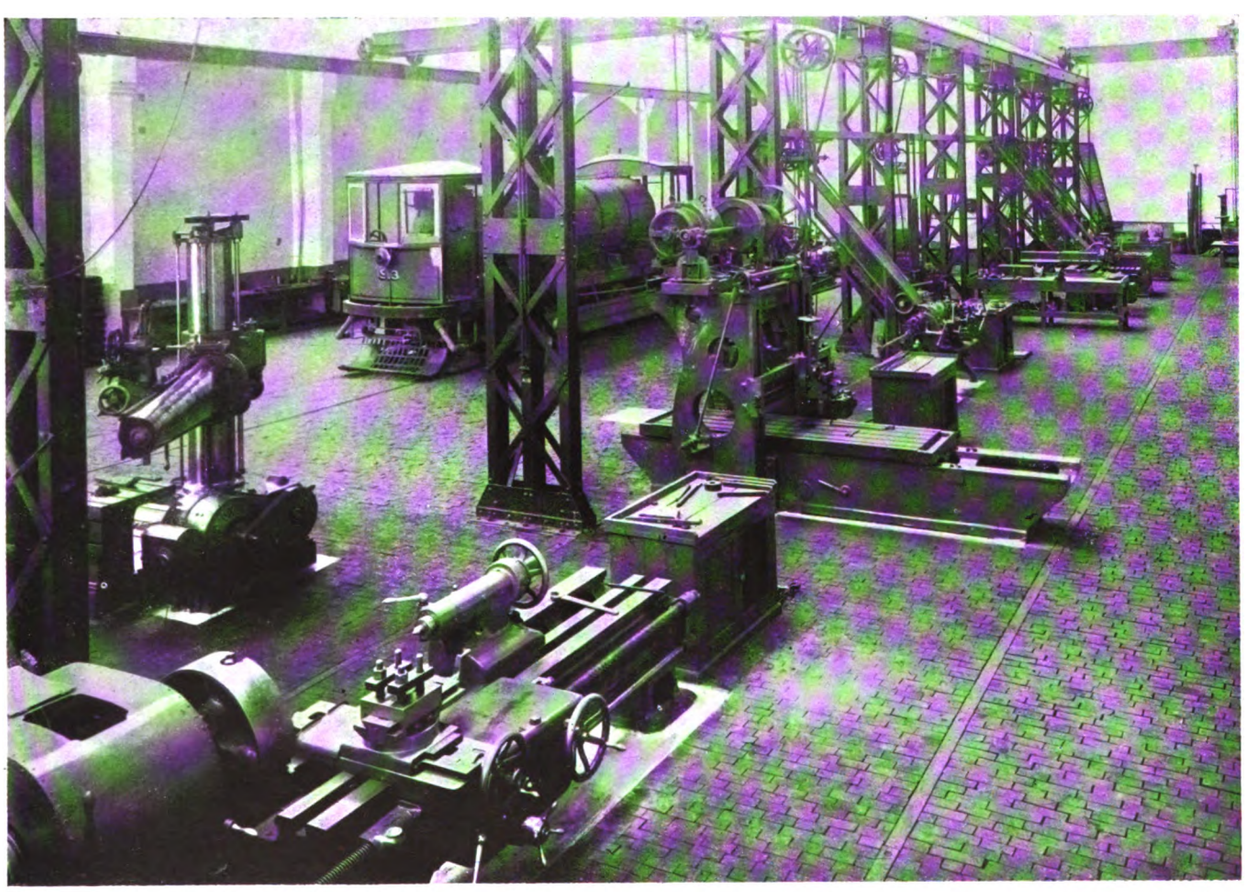

Fig. 11.—Machine Shop.

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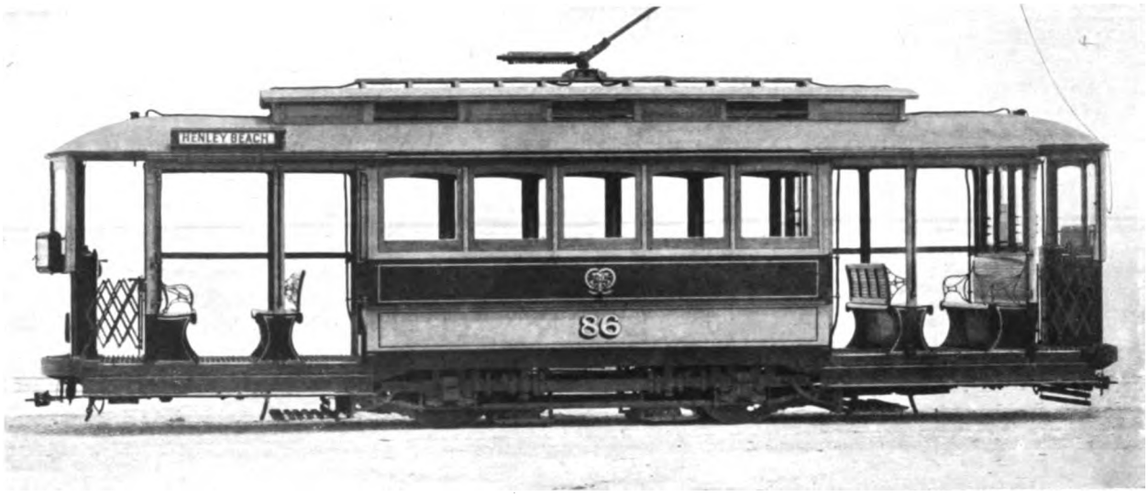

Fig. 12.—Single Truck Combination Car.

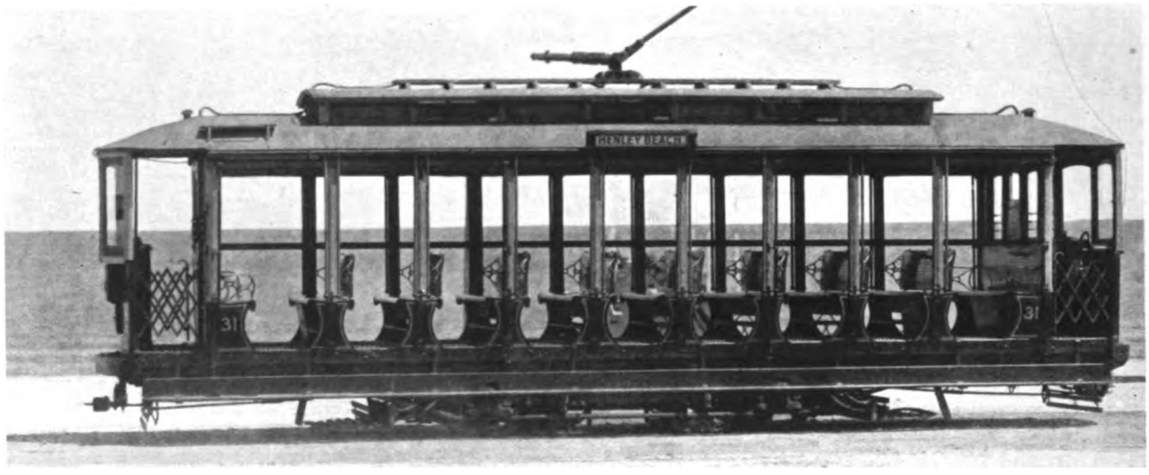

Fig. 13.—Single Truck Cross Bench Open Car.

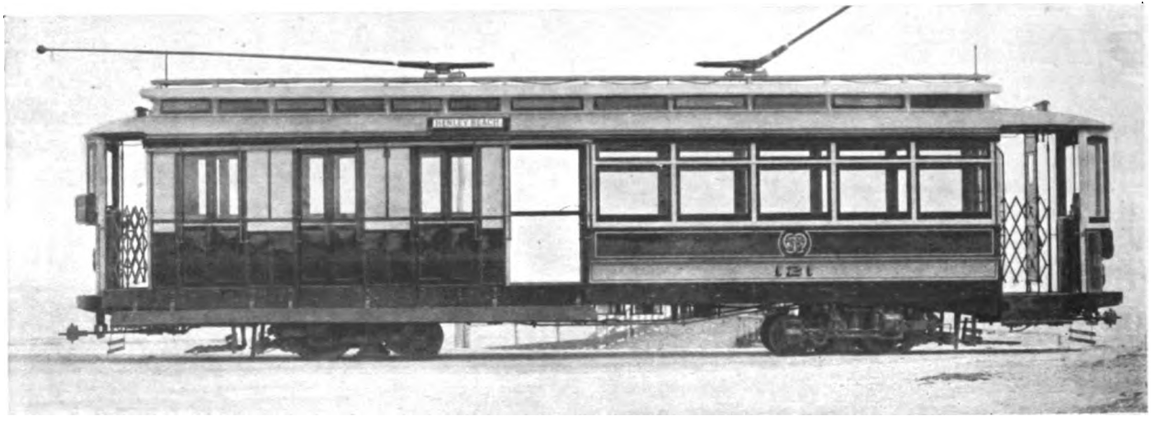

Fig. 14.—Closed Bogie Car with Side and End Entrance and Maximum Traction Trucks.

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the offices for time tables, roster clerks, dark room for photography, &c., staff mess-rooms and rooms for the caretaker. Near the entrance to the car depot is the lamp-room and pay office, and waiting shed for the employees. On the south-western corner of the site is situated a laboratory, testing-room, oil store, general stores building (30 ft. by 50 ft.), and space for timber

a car depot at Port Adelaide, with a capacity for 36 cars, together with an accommodation building. All the details of this depot are similar to those of the main depot, from which it is eight miles distant. A site has been purchased near the centre of Adelaide on which it is proposed to erect another depot with a capacity for 50 cars.

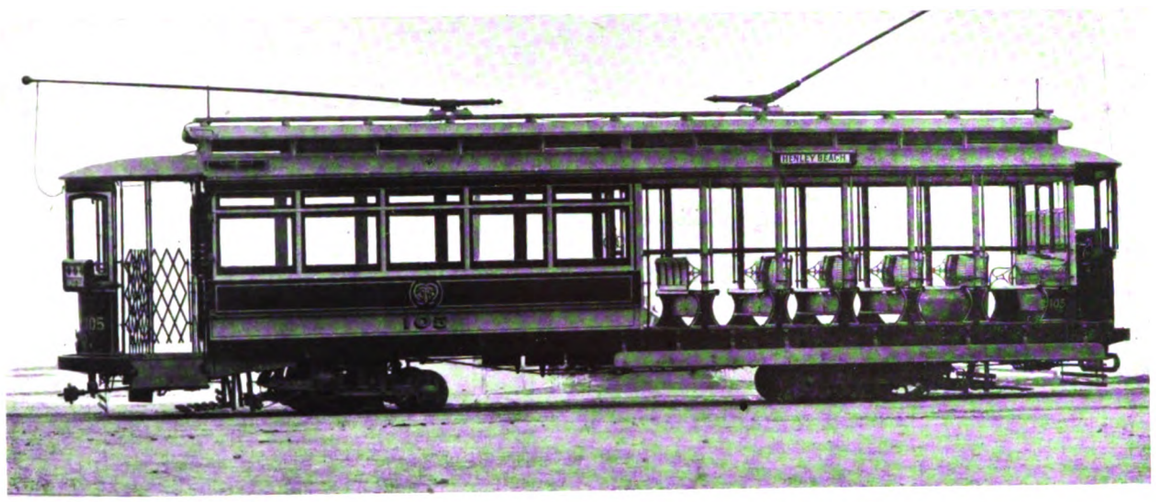


Fig. 15.—Open Bogie Car with Closed Saloon.

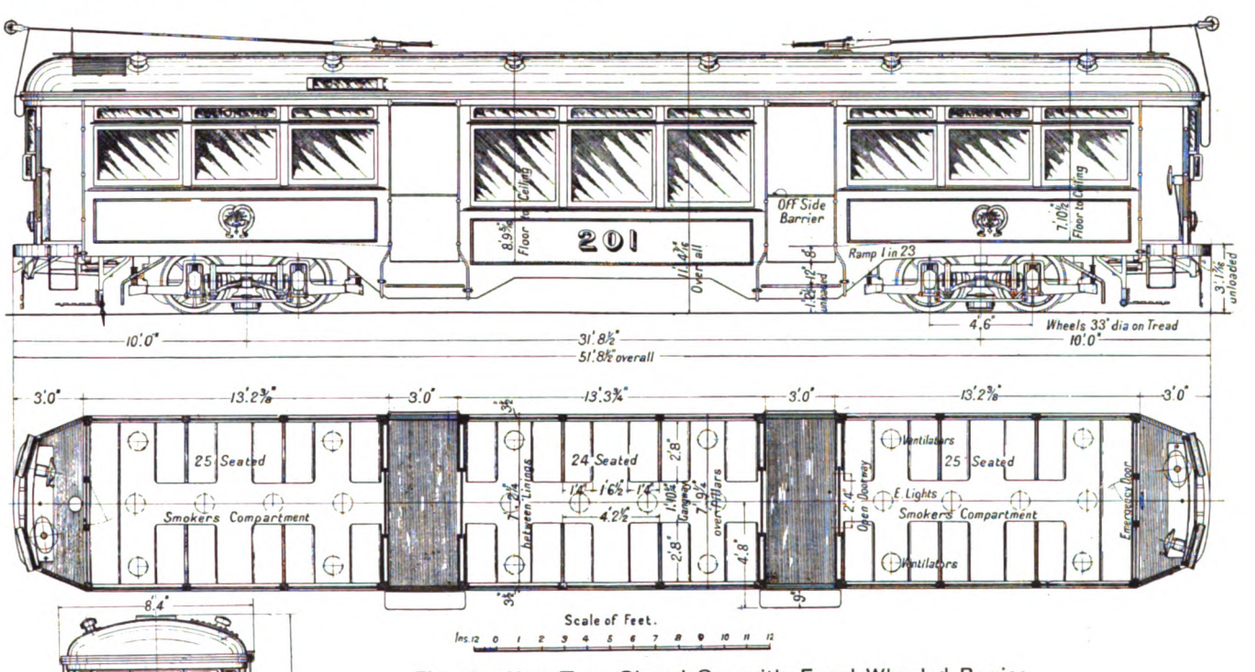
racks, etc. On the north-eastern corner of the site is an emergency house, which is fitted with pits, etc., for motor-driven tower wagons, lorries, motor cars, etc., with mess-room and lavatory for the overhead staff.

Adjacent to the emergency house are two dwelling-houses, one for the overhead foreman and the other for the depot foreman, so that these two men are easily

The rolling stock at present consists of 170 cars of the following types :—

Combination cars...	90	Seating capacity		40
Open cars	10	,,	,,	50
Closed bogie cars...	50	,,	,,	56
Open bogie cars ...	20	,,	,,	—

There are also three water sprinklers, two petrol-



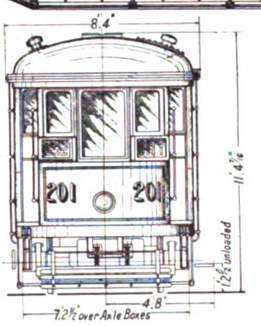


Fig. 16.—New Type Closed Car with Equal Wheeled Bogies.

accessible for emergencies at all hours. The northern end of the site is used for the permanent way stores, tar mixture, etc., as indicated in Fig. 5. There is also

driven tower wagons, one 4-ton petrol-driven lorry, one petrol-driven emergency lorry, one electric delivery van, and one motor car.

The types of cars in use are shown in Figs. 12 to 16. They are all of the single-deck type with clerestory roofs and closed ends. The combination car (Fig. 12) contains a saloon fitted with ten reversible

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seats, with open compartments at each end. The total seating capacity is 40, with ample standing room. This car is mounted on a single truck with 9-ft. wheel base. At present there are 90 of these cars; 20 more are being constructed.

A general view of the open type of car, of which there are 10, is given in Fig. 13. This has ten cross benches seating 50 passengers, and is mounted on a single truck with a 9-ft. wheel base. All single truck cars are fitted with Westinghouse motors and controllers, and are mounted on Brill 21-E trucks. There are 50 cars of the closed bogie type (Fig. 14), measuring 43 ft. long over the buffers. Half of the car is an open saloon with longitudinal seats; the other half is for smokers, with cross benches. These cars seat 56 passengers each, have ample standing room, and are mounted on Brill maximum traction trucks and equipped with G.E. motors and Westinghouse controllers.

The semi-open bogie car is illustrated in Fig. 15. This car measures 43 ft. over the buffers, and half of its length is a saloon with longitudinal seats, the other half being open with cross benches. There are 20 cars of this type, and they are mounted on Brush maximum traction trucks, and are equipped with Dick-Kerr motors and Westinghouse controllers. All the cars have the Westinghouse magnetic brake.

A car of a new type, designed by Mr. Goodman to meet the varying traffic conditions in Adelaide, has recently been adopted by the Trust, and is shown in Fig. 16. Fifty cars of this type will be constructed as soon as war conditions permit. The new car measures 51 ft. 8 in. over the buffers, and is divided into three saloons, the two end saloons being reserved for smokers. There is a wide gangway between the saloons, and it will be noticed that the steps have been kept within a reasonable height. The seats are permanently fitted back to back, and there is seating capacity for 74 passengers, ample accommodation being provided for another 100 standing passengers at times of crush load. The side windows lower to their full length, so that the car can be opened for summer use.

A very useful machine, shown in Fig. 17, is a rail groove cleaner and water sprinkler. The tank has a

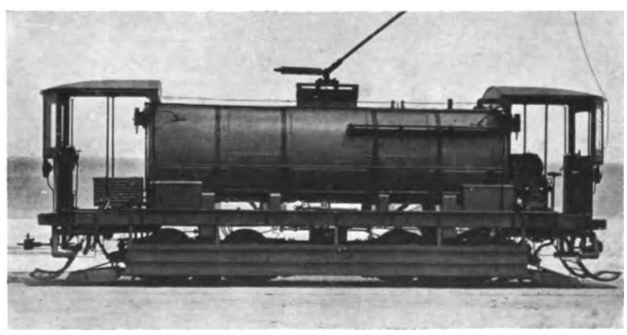

Fig. 17.—Rail Groove Cleaner and Water Sprinkler.

capacity of 2,000 gallons. There are three Jones patent rail groove cleaners, which consist of two jets impinging at different angles on the groove of the rail, and these effectually remove all detritus. These tanks are mounted on Brush equal-wheel bogie cars, and are equipped with Westinghouse motors.

The centre of the Adelaide system is King William Street, and here special turn-outs and junctions have been laid in order to provide facilities for conveniently handling the traffic. The arrangements are shown in Fig. 18. An important feature is the equipment of each of five four-way double junctions with an interlocking system, a diagram of one of which is given in Fig. 19. This interlocking arrangement is similar to that which has been in use on the Sydney (N.S.W.) tramways for many years, and it will be noted that the

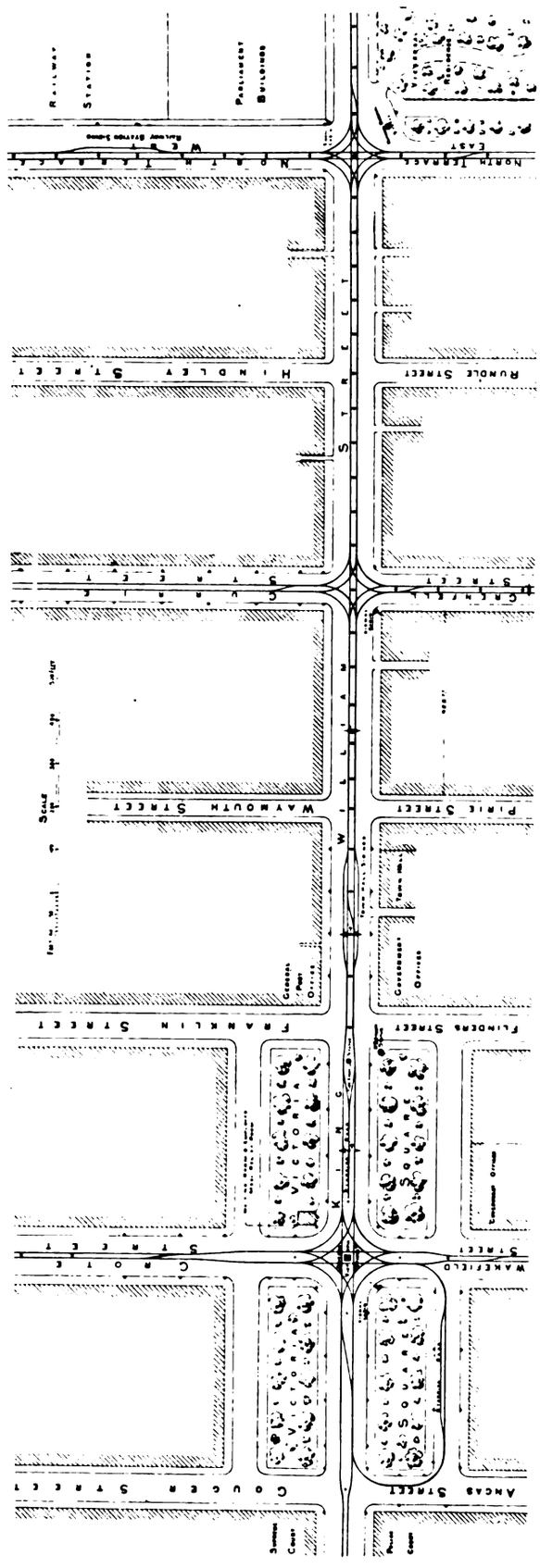

Fig. 18.—Arrangement of Tracks and Junctions at King William Street.

interlocking is so arranged as to avoid the possibility of a side-on collision if a car should go ahead against the signals.

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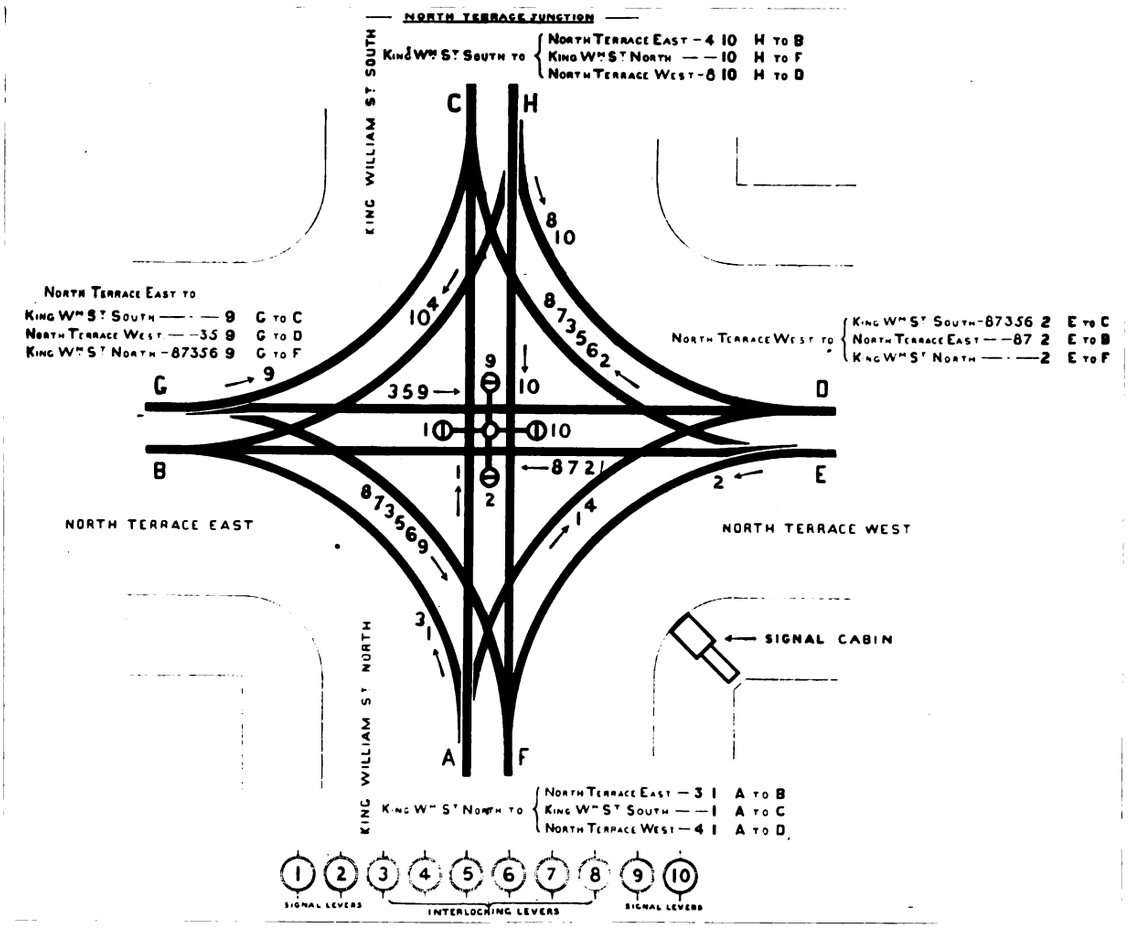
NORTH TERRACE JUNCTION
KING WILLIAM ST SOUTH
KING WM ST SOUTH TO { NORTH TERRACE EAST — 4 10 H TO B; KING WM ST NORTH — — 10 H TO F; NORTH TERRACE WEST — 8 10 H TO D
NORTH TERRACE EAST TO { KING WM ST SOUTH — — — 9 G TO C; NORTH TERRACE WEST — — 35 9 G TO D; KING WM ST NORTH — 87356 9 G TO F
NORTH TERRACE WEST TO { KING WM ST SOUTH — 87356 2 E TO C; NORTH TERRACE EAST — — 87 2 E TO B; KING WM ST NORTH — — — 2 E TO F
NORTH TERRACE EAST
NORTH TERRACE WEST
SIGNAL CABIN
KING WILLIAM ST NORTH
KING WM ST NORTH TO { NORTH TERRACE EAST — 3 1 A TO B; KING WM ST SOUTH — — 1 A TO C; NORTH TERRACE WEST — 4 1 A TO D
SIGNAL LEVERS
INTERLOCKING LEVERS
SIGNAL LEVERS

Fig. 19.—Diagram of Interlocking System at a Four-Way Double Junction.

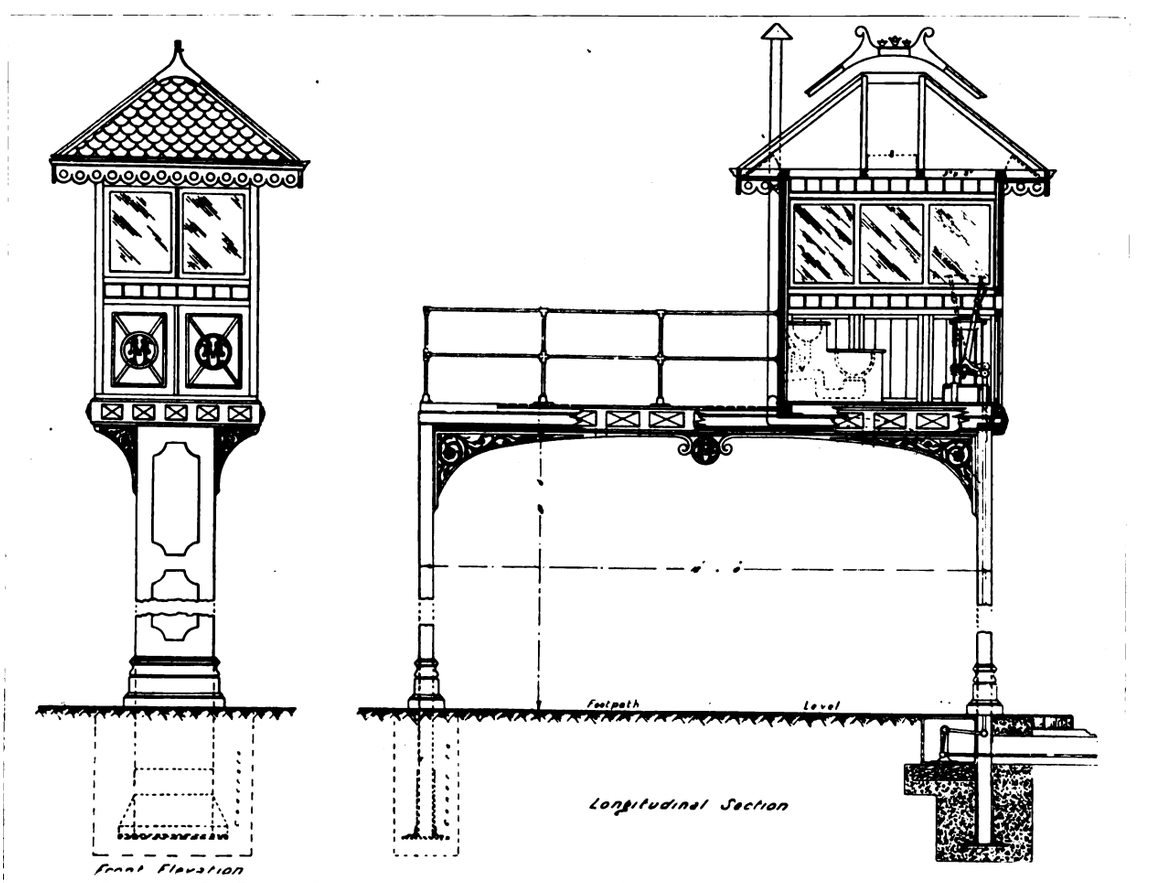

Fig. 20.—End and Side Elevation of Signal Cabin.

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Fig. 21.—Signal Cabin and Signals at North Terrace and King William Street Junctions.
(A plan of this Junction is given in Fig. 19.)

Fig. 22.—Adelaide Electric Tramways Band.

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On the Adelaide system over 200 cars pass through some of these junctions during a single hour at busy periods. One of the signal cabins with the signals has been erected opposite to the entrance to the grounds of Government House. A plan and elevation of the signal cabin is given in Fig. 20, and a view of the junction in Fig. 21.

As previously mentioned, the tramways are controlled by the Adelaide Municipal Tramways Trust, the present members of which are Mr. A. B. Moncrieff, M.Inst.C.E., chairman since its inception; Messrs. R. Cruickshank, W. W. Forwood, Thomas Gill, J. A. Harper, H. J. Holden, F. B. Moulden, and H. Sherriff. The general manager and chief engineer is Mr. W. G. T. Goodman, M.Inst.C.E., M.I.E.E., who was appointed in February, 1907, and designed the system and superintended its construction. Mr. Goodman is assisted by an able and efficient staff, the principal members of which are as follows:—Chief assistant engineer and station superintendent, Mr. E. S. Moulden; traffic superintendent, Mr. A. E. Ford; rolling stock superintendent, Mr. C. H. Wickham; overhead superintendent, Mr. C. F. Hursthouse; permanent way superintendent, Mr. J. Davies; secretary, Mr. C. R. Moyes; accountant, Mr. C. A. Smith; chief draughtsman, Mr. J. Macdonald; controller of stores, Mr. A. S. Lindsay. The organisation of the staff is clearly shown in Fig. 23, which indicates the relationship of one officer to another, and to what officer each man is responsible.

A notable adjunct to the tramway organisation is the Adelaide electric tramways band, a photograph of which is reproduced in Fig. 24. This band is maintained solely for the purpose of providing concerts at the tramway termini. Large rotundas have been erected by the Tramways Trust at Henley Beach terminus, seven miles distant from Adelaide, and at Kensington Gardens, a pleasure park four miles from Adelaide. At Kensington Gardens there are also tennis courts and cricket pitches, and during the season there is a large traffic to this park. The band is a military one, and the services of Mr. Christopher Smith, late bandmaster of the Besses o' th' Barn Band, have been retained by the Trust for some years. The concerts, which are varied in character, are a popular feature of life in Adelaide, and they have proved a very profitable source of revenue to the tramway undertaking. Many performances have been given gratuitously to assist in various patriotic movements, and by a special arrangement the band is allowed to give concerts in other cities, so that it has established a reputation throughout Australia.

At the outbreak of the war the Trust undertook to make up the difference between the rate of pay received from the military authorities and the rates paid in their service. This proved a great stimulus to the recruiting movement, as the concession was much appreciated by the men. Approximately 22 per cent. of the employees readily offered themselves for army service, and in the last issued report of the Trust photographs of each of the men who enlisted were reproduced. Nine of the men have made the supreme sacrifice on behalf of the Empire.

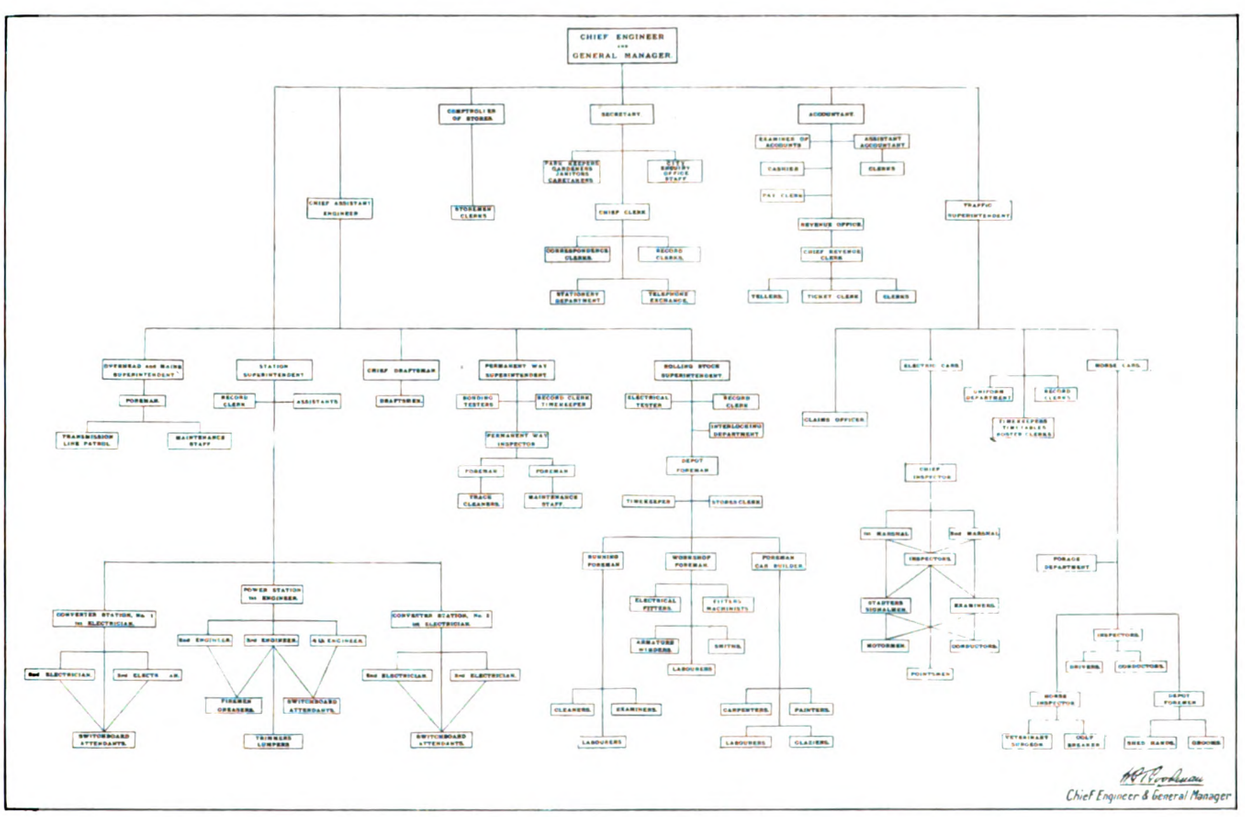

Fig. 23.—Organisation of Staff of Adelaide Municipal Tramways Trust.

Just previous to the war the Trust had decided to arrange for a service of motor omnibuses, and in July, 1914, it had entered into a contract for a supply of Daimler motor omnibuses. Owing to the war the Daimler Company were, however, unable to give delivery, and eventually the contract was cancelled. The omnibus bodies which had already been built locally were taken over by the Trust, and no doubt with the establishment of peace arrangements will be made to obtain the necessary chassis as soon as possible.

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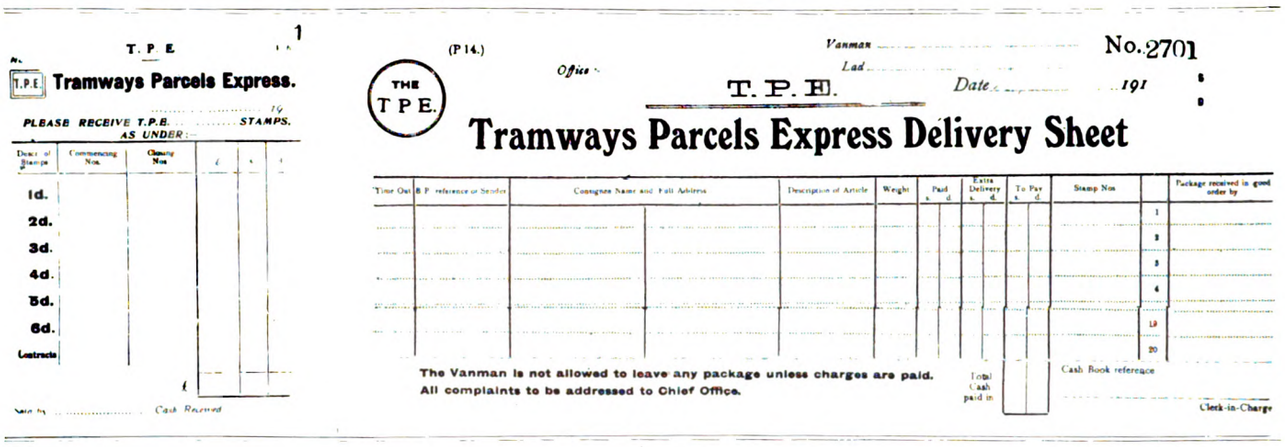
TRAMWAY GOODS SERVICE IN THE BLACK COUNTRY.

In our issue of January 11 last we dealt with some recent developments of the extensive parcel and goods service on the tramways of the Black Country by the Birmingham and Midland Tramways Joint Committee. A previous article, published on March 11, 1915, gave details of the scheme as it then was. We now reproduce *fac-similes* of some of the forms employed. It may be recalled that the Birmingham and Midland Tramways Joint Committee, representing five associated tramway companies in the district, inaugurated an inter-urban parcel service on the ordinary passenger cars as far back as November, 1905. From Birmingham the lines radiate to a number of important towns. The parcel traffic so grew and the weights of the packages so increased that five years ago the Joint Committee began to use specially built freight or baggage cars. Since the war began the heavy parcel and goods traffic has developed enormously, and the baggage cars now haul trailers.


T. P. E. 1

Tramways Parcels Express.

PLEASE RECEIVE T.P.E. ..... STAMPS. AS UNDER:—

Desc. of Stamps	Commencing Nos.	Closing Nos.	£	s.	d.
1d.					
2d.					
3d.					
4d.					
5d.					
6d.					
Contracts					

Sent by ..... Cash Received

(P 14.) Vanman ..... No. 2701

Office ..... Lad .....

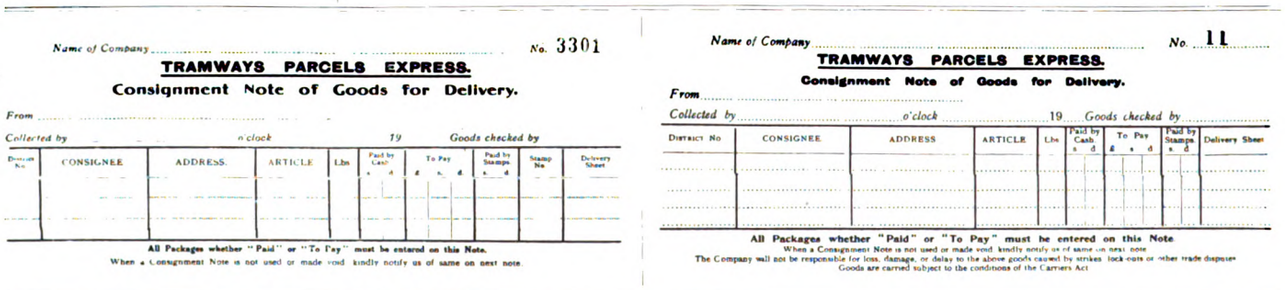
THE T P E. T. P. E. Date 191

Tramways Parcels Express Delivery Sheet

Time Out	B. P. reference or Sender	Consignee Name and Full Address	Description of Article	Weight	Paid s. d.	Extra Delivery s. d.	To Pay s. d.	Stamp Nos.		Package received in good order by
									1	
									2	
									3	
									4	
									19	
									20	

The Vanman is not allowed to leave any package unless charges are paid.
All complaints to be addressed to Chief Office.

Total Cash paid in ..... Cash Book reference ..... Clerk-in-Charge


Name of Company ..... No. 3301

TRAMWAYS PARCELS EXPRESS.

Consignment Note of Goods for Delivery.

From .....

Collected by ..... o'clock ..... 19 ..... Goods checked by .....

District No.	CONSIGNEE	ADDRESS	ARTICLE	Lbs.	Paid by Cash s. d.	To Pay £ s. d.	Paid by Stamps s. d.	Stamp No.	Delivery Sheet

All Packages whether "Paid" or "To Pay" must be entered on this Note.
When a Consignment Note is not used or made void kindly notify us of same on next note.

Name of Company ..... No. 11

TRAMWAYS PARCELS EXPRESS.

Consignment Note of Goods for Delivery.

From .....

Collected by ..... o'clock ..... 19 ..... Goods checked by .....

District No.	CONSIGNEE	ADDRESS	ARTICLE	Lbs.	Paid by Cash s. d.	To Pay £ s. d.	Paid by Stamps s. d.	Delivery Sheet

All Packages whether "Paid" or "To Pay" must be entered on this Note
When a Consignment Note is not used or made void kindly notify us of same on next note
The Company will not be responsible for loss, damage, or delay to the above goods caused by strikes lock-outs or other trade disputes
Goods are carried subject to the conditions of the Carriers Act

E 9601

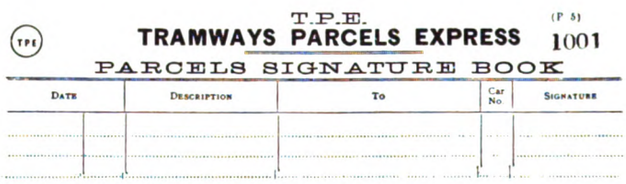
B. & M. TRAMWAYS JOINT COMMITTEE.
Tramways Parcels Express.

TO PAY 5d

Not exceeding 42 lbs.

This Package is accepted for Transit subject to the Committee's Official Rules and Regulations relating to the carriage of Parcels

Williamson, Ticket Printer, Ashton


T.P.E. (P 5)

TRAMWAYS PARCELS EXPRESS 1001

PARCELS SIGNATURE BOOK

Date	Description	To	Car No.	Signature

Tramways Parcels Express.

No. 300041

Parcels are carried subject to the Company's conditions and regulations relating to the carriage of Parcels.

B. & M. T. J. C.

TRAMWAYS PARCELS EXPRESS.

No. 123985

28 lbs. weight & under.

Parcels received and delivered solely at sender's risk, and the Committee will not be responsible for loss, damage or delay.

Jj 9001

B. & M. TRAMWAYS JOINT COMMITTEE.
Tramways Parcels Express.

TO PAY 3d

This Package is accepted for Transit subject to the Committee's Official Rules and Regulations relating to the carriage of Parcels

Williamson, Ticket Printer, Ashton

B. & M. T. J. C.

TRAMWAYS PARCELS EXPRESS

No. 66129

Parcels received and delivered solely at sender's risk, and the Committee will not be responsible for loss, damage or delay.

B. & M. T. J. C.

TRAMWAYS PARCELS EXPRESS

No. 103701

36 lbs. weight & under.

Parcels received and delivered solely at sender's risk, and the Committee will not be responsible for loss, damage or delay.

E 7801

B. & M. TRAMWAYS JOINT COMMITTEE
Tramways Parcels Express

TO PAY 6d

Not exceeding 56 lbs.

This Package is accepted for Transit subject to the Committee's Official Rules and Regulations relating to the carriage of Parcels

Williamson, Ticket Printer, Ashton

It will be noticed that a series of adhesive stamps are used for attaching to the packages. The stamps, as in the case of tramway passenger tickets, vary in colour according to the total value, and they are also consecutively numbered. The form used in distributing

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these stamps to the various depots is reproduced. We give also two consignment note forms, designed to show a full record as to each package, the consignee's name and address, the amount paid, if paid by stamps the stamp number, and the reference to the delivery sheet. Two styles of the latter are here shown, with columns for names of sender, consignee, and article, the weight, amount to pay, time forwarded, and other matters. The style of the parcel signature book is also shown. Then comes a daily office return, showing cash received in various ways, the numbers of parcels forwarded and received, and the parcels on hand not delivered. An agents' commission account gives particulars as to stamps and pay labels in stock, the numbers issued, and the total cash. Last, we have a monthly statement showing the agents' receipts and the amount of his commission, together with figures as to the number of parcels forwarded and delivered during the month.

ENGINEERING STANDARDS COMMITTEE.

The Engineering Standards Committee, which was formed in 1901 by the leading Engineering Institutions, has now become incorporated under the Companies Acts, 1906-1917, the word "Limited" being omitted by licence of the Board of Trade. The committee therefore becomes now a corporate body with a legal entity, and is thus enabled to maintain its position in regard to its brand, which has been largely used in a number of the British standard specifications. The wider use of the brand by manufacturers generally who are working to the British standards should be of material advantage to the British engineering industry throughout the world. The work that the committee has done during the past 17 years, which is such a monument to its founder, the late Sir John Wolfe Barry, and its position in the engineering world, make its incorporation a logical sequence in its development.

Name of Company

Tramways Parcels Express. No. 150

Office

Parcels Received ... *the* ... *day of* ... 191

No.	Sender.	Consignee. Name.	Consignee. Address.	Article.	Weight lbs.	Cash s.	Cash d.	To Pay s.	To Pay d.	Frank s.	Frank d.	Contract No.	Stamps No.	Car No.	Time Package Forwarded.	Reference.

T. P. E.

TRAMWAYS PARCELS EXPRESS.

DAILY OFFICE RETURN.

OFFICE ... *SECTION* ... *DATE* ...

	£	s.	d.
Cash Received on local parcels forwarded			
" " " other " "			
Cash Collected on local parcels received for delivery			
Delivery Sheet Nos			
Cash Collected on other parcels received for delivery			
Delivery Sheet Nos			
£			

Cash Received by ... Date ...

	£	s.	d.
Face value of Stamps in Stock			
Face value of "To Pay" Labels in Stock			

Cash Collected on "Cash on Delivery" Parcels

Sender	Consignee	Address	Amount Collected £ s. d.

Parcels Forwarded No		Parcels Received No.	
Local		Local	
Other Parcels		Other Parcels	

Parcels on hand Not Delivered

Sender	Consignee	Reason why not delivered

Name of Clerk-in-charge ...

Names of Delivery Lads ...

This Return to be sent daily to the Chief Office

No.

T. P. E.

TRAMWAYS PARCELS EXPRESS.

AGENTS' COMMISSION ACCOUNT.

Value of Stamps	Stamps in Stock Com. Nos.	Stamps in Stock Chm. Nos.	No. of Stamps	Value £	Value s.	Value d.	Stamps Issued Com. Nos.	Stamps Issued Chm. Nos.	No. Sold	Total Cash £	Total Cash s.	Total Cash d.	Remarks
1d.													
2d.													
3d.													
4d.													
5d.													
6d.													
										Total Cash £			

Value of To Pay Labels	To Pay Labels in Stock Com. Nos.	To Pay Labels in Stock Chm. Nos.	No. of To Pay Labels	Face Value £	Face Value s.	Face Value d.	To Pay Labels Issued Com. Nos.	To Pay Labels Issued Chm. Nos.	Total No. Issued	Total Value £	Total Value s.	Total Value d.	Remarks
1d.													
2d.													
3d.													
4d.													
5d.													
6d.													
										Total £			

MONTHLY STATEMENT.

DR	£	s.	d.	CR	£	s.	d.
Stamps sold as per particulars given above				Commission at ... on Stamps sold			
Amounts collected on local Parcels delivered. D.S. Nos. ...				Commission at ... on To Pay Parcels forwarded			
Amount collected on ... delivered D.S. Nos ...				Commission at ... on local Parcels delivered			
				Commission at ... on other Parcels delivered			
	£				£		

Amount due to ... £ s.

Number of local Parcels forwarded Month ending ...

Number of other Parcels forwarded Month ending ...

Number of local Parcels delivered Month ending ...

Number of other Parcels delivered Month ending ...

Agent Settled and Cash received by ...

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THE
Tramway and Railway World

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Housing Problems and Traction.

Urgency has lately been given to the housing problem in a manner that involves greater necessity for considering the provision of travelling facilities. That such is the case is apparent from the statement of the President of the Local Government Board that an endeavour will be made to provide 300,000 dwellings, with the aid of standardised materials to be produced by national munition factories, within a year of the termination o the war. The further announcement that not more than twelve houses are to be erected to the acre must entail longer lines of communication. It will also mean that concurrently with the selection of the sites consideration must be given to the provision of traction facilities. A considerable mileage of new roads will have to be constructed, and this matter will raise the problems of the width of the thoroughfares and the provision of a separate rail track so that light railways may be constructed on the sleeper principle. This will have an important bearing upon the financial aspect of traction schemes. As is well known, Liverpool has of late years constructed a considerable mileage in this manner, and the example is being followed at Birmingham. That its importance is realised in the latter city has been shown by the reports which Mr. Alfred Baker has lately presented to the Tramways Committee. Mr. Baker's conclusions are emphasised by a paper dealing with arterial roads and the town planning scheme which Mr. H. E. Stilgoe, the city engineer, submitted to the Town Planning Institute on April 19. Mr. Stilgoe showed that not only is sleeper track much cheaper, but that the cost of upkeep is less by hundreds of pounds per mile per annum, that greater speed and ease in running are attained, that rolling stock maintenance is less, that there is less noise, and that a greater number of journeys can be run by reason of the absence of hindrance from other traffic. Another conclusion advanced by Mr. Stilgoe has an important bearing upon the housing scheme which the Government are pressing upon local authorities. With the advantages and saving of cost to be obtained from a separate track, tramways, he urged, should be laid in suitable districts ahead of building development, as in the case of railways, the construction of the adjacent carriageways and footways being postponed until traffic demands them. Evidence that the relation between housing and transport is well understood has also been lately forthcoming from Leicester, Bristol, Middlesbrough and Leeds. The former borough has held a conference with adjacent local authorities with a view to securing roads of sufficient width and suitable construction.

Inner District Congestion.

Mr. W. Lancashire city engineer of Leeds, in addressing a meeting of the Institute of Municipal and County Engineers, outlined the present and future housing schemes needed in his city, and said that the Corporation have made considerable advance with the framework of main and secondary roads. For the town planning schemes it is proposed to follow the example of Liverpool and Birmingham in making arterial roads to allow of a separate tramway track on sleepers, thus requiring fewer cars by reason of increased speed, besides giving the advantages to which reference has been made above. Mr. Lancashire further mentioned that some members of the Council are pressing for some of the roads to be 150 feet wide, to allow later on of four lines of tramways—two on the

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surface and two below for very fast traffic. Thus as Leeds grows to be a still greater city, fast transit lines may be provided without the excessive cost incurred in London and some American and Continental cities. This consideration and a review of the disadvantages which neglect to provide roads of proper width has imposed upon Leeds are set forth in an illustrated pamphlet issued by Mr. Lupton, who for eight years was chairman of Leeds Improvements Committee. The author's argument for the 150-ft. road is that when the population of any part of a city becomes dense the traffic on an up and down tramway is retarded, and it is necessary to arrange for both fast and slow up and down traffic. While this contention may be accepted in relation to existing roads, it is not applicable to new localities in which a separate track may be laid. The retardation of rail traffic in central districts is the reason why the claim has been made that slow-going vehicles should be compelled to keep to the side of the road. Mr. Lupton's treatise is worthy of wide perusal. Not the least striking statement in it is that with 13,000 acres still undeveloped within the city boundaries owing to the lack of communication, many citizens have gone to live in neighbouring towns that are well served by railways. It is satisfactory to find that Liverpool is not content to rest content with its work as a pioneer of wide ring roads. On the motion of Sir Charles Petrie, who for many years presided over the Tramways and Electricity Committee, the Corporation have appointed a Reconstruction Committee to deal with such matters as the opening up of new tramway routes, the construction of underground means of coping with the increasing traffic, town planning and housing, etc. It is time that Manchester arrived at definite conclusions on the transit congestion problem that has been engaging attention there for nearly a decade.

Economy from Fixed Stops. Good progress is being made in the response to the Board of Trade's suggestion that economy can be effected by cutting out many of the "stop by request" stations on car routes. The long observance of compulsory stops at an average distance of about four hundred yards facilitates a step that will ensure not only a saving of energy but a reduction in the wear of car equipment and of rails. From the point of view of economy in more ways than one, as well as the convenience of passengers, it is also necessary that motor omnibuses should have fixed stopping places, thus lessening the calls to stop at places that are not traffic points. On provincial routes the fixed stop is a recognised practice. It is difficult therefore to understand why the Commissioner of Police for the Metropolis should forbid fixed stopping places for omnibuses, especially as at traffic points the stops already come under that category. Moreover, at certain places, as, for instance, at each end of the narrow portion of the Strand, the police practically insist upon fixed stops by forbidding, owing to the congestion, intermediate picking up of passengers. Scotland Yard, however, has not ventured to explain why the fixed stopping place, with the consequent lessening of obstruction, is not equally beneficial in other localities. For several years the companies have desired to adopt such a practice in response to requests made by the public and by the borough councils. The reply of the Commissioner is that he does not consider the present time to be a fitting opportunity of initiating it. Lately the Standing Joint Committee of the borough councils have urged upon the General Omnibus Company the desirability of regular stopping places as a means of remedying complaints that drivers refuse to stop when hailed. As the company have failed to make an impression on the police, the local authorities should now take up the matter. They might inquire of Sir E. Henry as to what period he considers will be appropriate for adding to the number of fixed stops. This reform is particularly desirable at a time when the war has so reduced the number of conveyances that the accommodation is inadequate. There is also need for the ratepayers' representatives to impress upon Scotland Yard that they are the servants of the public. The retention of the control of the Metropolitan Police in the hands of the Home Secretary was never intended to enable the former to assume the functions of a traffic authority. For that work their responsibility for inspecting and licensing public vehicles and the employees is no sort of training. Nor is the record of the police in the matters of women conductors and drivers one that has facilitated the efforts made by managers to release their employees for military purposes, and it is time that the voice of traction undertakings was raised in a demand for reconstruction

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in the form of a Traffic Board for London. This reform has long been needed, is now more than ever necessary, and there is no reason whatever why it should be postponed to the end of the war. Traction authorities, both municipal and private, are much more united in their aims and their views than in the past, and there never will be a better opportunity than the present to institute a traffic board for the metropolitan area.

SELECT COMMITTEE ON FARES.

STATUTORY CHARGES TO BE TEMPORARILY INCREASED.

On June 7 was issued the report of the Select Committee appointed to consider and report whether it is expedient that provision should be made for the temporary modification of statutory requirements with regard to the charges for the conveyance of traffic on tramways and railways constructed wholly or mainly on public roads in the case of undertakings whose financial circumstances have been injuriously affected by causes arising out of the war; and, if so, on what terms and conditions, and whether by private bill or by general legislation. The report is as appended:—

(1) Your committee have confined their investigation to the question of principle, being of opinion that examination of individual cases would have involved a prolonged inquiry, and would not have assisted them to arrive at general conclusions.

(2) In accordance with this decision, evidence was tendered by the Tramways and Light Railways Association, representing companies, and by the Municipal Tramways Association, representing municipal tramway undertakings. Full opportunity was afforded for other evidence to be tendered, but none was forthcoming.

(3) The evidence may be roughly summarised as follows:—All tramway and light railway undertakings are injuriously affected by increased working expenses due to the war, wages having risen from 60 to 100 per cent., and the advance in cost of materials varying from about 100 per cent. to over 200 per cent. on pre-war rates. In addition, the increased cost of fuel and consequently of power coupled with restrictions on supply, should be taken into consideration, and an Order in Council, dated December 21 last, amending the Defence of the Realm Regulations in respect of tramway materials and plant, definitely indicates substantial interference with the operation of these undertakings. The larger revenue earned by many tramways does not compensate for the constantly advancing working costs; but in most of the large towns, where the tramway systems are generally owned by the municipalities, there is still a margin, since the fares charged are in most cases lower than the statutory maximum.

The plea for immediate relief is put forward on behalf of the undertakings which are now charging maximum fares and yet are unable to pay their way.

(4) Certain statistics were supplied to your committee at their request. These figures showed that out of 80 municipal undertakings only 28 are charging maximum fares to ordinary passengers and 44 are charging maximum workmen's fares; the remainder are therefore more fortunately placed, or they are showing perhaps tenderness towards the passenger as distinguished from the ratepayer.

(5) Your committee are satisfied that some possibility of relief should be afforded to those undertakings which cannot increase their revenue to compensate them for the abnormal working expenses occasioned by war conditions. Although in the case of municipalities deficits can be made good out of the rates, your committee agree with the principle that the passenger should not be carried at a loss.

(6) Your committee therefore recommend that the Board of Trade should be empowered by general legislation to permit the temporary modification of statutory requirements with regard to the charges for the conveyance of traffic on tramways and railways constructed wholly or mainly on public roads in the case of undertakings whose financial circumstances are proved to the satisfaction of the Board to have been injuriously affected by causes arising out of the war.

(7) Your committee are of opinion that the word "temporary" in the preceding paragraph should be interpreted as covering a period limited to the duration of the war and two years after its termination.

LANCASHIRE AND CHESHIRE TRAMWAYS COUNCIL.

At a meeting of representatives of Lancashire and Cheshire tramway authorities, both municipal and company owned, held on Thursday, May 16, it was decided to form a council for those districts, and it is expected that in a short time all the authorities will join. The objects for which the Council has been formed are set out in the draft constitution, which is given in full below.

Alderman Linsley (chairman of Salford Corporation Tramways Committee) has been appointed chairman; Mr. Alderman Russell Taylor (chairman of Liverpool Corporation Tramways Committee), vice-chairman; Mr. J. Barnard (general manager, Bolton Corporation Tramways), hon. secretary; and Mr. Alderman Clark (Rochdale) and Mr. Henry Mozley (Burnley), auditors.

DRAFT CONSTITUTION.

TITLE.

1. The title shall be the Lancashire and Cheshire Tramways Authorities' Council.

OBJECTS.

2. The Council is established for the following objects, viz., (*a*) to promote, further, and protect the interests of the Council and of the members generally; to secure mutual support and co-operation in dealing with demands and action taken by workmen, or combinations thereof, on all matters or questions affecting tramways authorities, including such questions as rates of pay, hours and conditions of labour, overtime, limitation of work, piece work, and demarcation of work. (*b*) To define suitable areas and promote the fixing of uniform conditions of labour, rates of pay, etc., within such areas.

CONSTITUTION.

3. (*a*) This Council shall be an association or federation of tramways authorities, municipal and company owned, in the counties of Lancashire and Cheshire.

(*b*) The Council shall consist of two representatives elected by each tramways authority, together with the tramways manager of each authority.

MEMBERSHIP.

4. Application for membership of this Council shall be made by resolution duly passed by tramways authorities so desiring to join.

MANAGEMENT.

5. (*a*) Each authority shall be entitled to one vote.

(*b*) The Council shall meet quarterly or oftener if required, and 15 shall form a quorum.

(*c*) The last meeting of the financial year of the Council shall be the annual general meeting, and shall take place in the month of April, when the annual report, accounts, etc., shall be presented.

ELECTION OF OFFICERS.

6. At the annual meeting in April there shall be elected the following officers, viz.:—A chairman, vice-chairman, secretary, and two honorary auditors, who shall hold office for one year. The chairman, vice-chairman, and secretary shall be *ex-officio* members of all committees of the Council.

DUTIES OF SECRETARY.

7. A secretary shall be appointed by the Executive Committee for such period and upon such terms as they may in writing determine. It shall be the duty of the secretary to act as clerk and treasurer, keep the minutes of all meetings, conduct all correspondence, receive and pay over to the Council's bankers all subscriptions and other moneys, keep proper accounts, prepare and issue any necessary reports and notices, and conduct the affairs of the Council under their direction.

MEETINGS.

8. (*a*) The annual general meeting of the Council shall be held in the month of April, of which at least seven days' notice shall be given by the secretary, and shall be held at such place as the Council may determine.

(*b*) Special meetings of the Council may be called by the chairman of the Council at any time, and shall be so called by him on the requisition of five authorities within fourteen days of such requisition. Any requisition must be in writing, and state the business proposed to be brought before the meeting.

(*c*) All questions before any meeting of the Council shall be decided by a majority of the votes of those present at such meeting, and entitled to vote, and the chairman shall have a casting vote besides his deliberative vote.

FUNDS.

9. (*a*) Each tramways authority shall pay an entrance fee of £5 5s., which shall include the first year's subscription. The subscription for the second and subsequent years shall be £2 2s. per annum.

(*b*) Levies may also be made on each tramway authority when in the opinion of the Council such levies are required.

REPORTS, NOTICES, ETC.

10. Each tramways authority shall forward to the secretary reports of notices given by employees for increase in wages, alteration of working conditions, etc. In case of a strike or any urgent matter requiring immediate decision, notice thereof must be at once forwarded to the secretary.

INDUSTRIAL COUNCILS, ETC.—DELEGATES' EXPENSES.

11. Any delegates appointed to represent the Council at any conference or meeting for purposes connected with the affairs of the tramways authorities shall have expenses paid by the Council.

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ELECTRIC POWER SUPPLY.

RECOMMENDATIONS FOR NATIONAL CONTROL.

The report of the committee appointed by the Board of Trade early in 1917 to consider the question of electric power supply for all purposes has been issued as a White Paper (Cd. 9062). The terms of reference to the committee were as follow :—

" To consider and report what steps should be taken, whether by legislation or otherwise, to insure that there shall be an adequate and economical supply of electric power for all classes of consumers in the United Kingdom, particularly industries which depend upon a cheap supply of power for their development."

Shortly after the appointment of the committee the reports of the Coal Conservation Sub-Committee of the Reconstruction Committee, and of the Electrical Trades Committee appointed by the Board of Trade, were issued. Their investigations have received the attention of the Power Supply Committee, which unanimously came to the following conclusions :—

(1) That when British industry is subjected to the test of international competition after the war, success will depend upon the adoption of the most efficient methods and machinery, so as to reduce manufacturing costs.

(2) That a highly important element in reducing manufacturing costs will be the general extension of the use of electric power, and it is by largely increasing the amount of power used in the industry that the average output per head, and, as a consequence, the wages of the worker, can be raised.

(3) That the present system under which a supply of electricity is provided in a large number of small areas by separate authorities is the result of a policy adopted at a time when electrical engineering was in its infancy.

(4) That the interconnection of existing electrical supply stations, recommended by the Board of Trade in their letter of May 25, 1916, however desirable in itself, cannot alone meet the requirements of the situation.

(5) That a comprehensive system for the generation of electricity, and, where necessary, re-organising its supply, should be established as soon as possible.

The committee heard evidence from representative associations, and they had written evidence from authorities in Ireland. They considered the evidence given before the Electrical Trades Committee by Mr. Stephen Sellon for the Tramways and Light Railways Association, together with other written statements.

The committee recognised that the value of the application of electricity to machinery and processes has been demonstrated in a striking manner during the war, while the rapid expansion of munition factories was only rendered possible by its aid. The extent to which electricity may be further applied to cheaper and better mechanical production, to improved railway service, to electro-chemical and metallurgical processes, to agriculture, and to domestic labour-saving apparatus is altogether incalculable. The committee have taken into account any seeming conflict of national and local interests, and in the proposals set forth it is hoped that the respective claims of national economic interest and principles of local self-government will be equitably adjusted.

The laws affecting the public supply of electricity, the committee observe, are unsuited to the present time. It has been proved that a local area is rarely the most economical area of electrical supply. The right of veto exercisable by councils in England, Wales, and Ireland, and by the County Councils and Police Commissioners in Scotland, on the erection of overhead wires, has greatly militated against expansion and development, and has raised the cost of electricity supplied.

Owing to the chaos of different systems, and the absence of any attempt to standardise pressures and frequencies, co-operation between neighbouring authorities is difficult and expensive. In London seven railway and tramway systems generate electricity for the purposes of traction at differing frequencies—one at 50, two at 33⅓, and four at 25—thus rendering exchange of electricity impracticable except at great expense involved in converting it. In the area of Greater London 70 authorities supply electricity, and own 70 generating stations, with 50 different types of system, 10 frequencies, and 24 voltages. Manufacturers have been slow to take a public supply of power partly through a mistaken reluctance to being dependent on others for anything they can make themselves. The same tendency has been shown by railway companies. The committee notice from the evidence that it is generally recognised that there must be more co-operation if the country is to progress.

In summing up the position, they state that the evidence was unanimous in declaring it to be unsatisfactory, and that something must speedily be done. Their investigation confirms fully the opinion of the Coal Conservation Sub-Committee and the Electrical Trades Committee regarding prevailing conditions. The report remarks that where power is distributed from central stations, the capital required for new industries will be less than where such power does not exist. About 600 bodies are generating electricity for public purposes, apart from the large number of manufacturers, collieries, and others generating their own power. These separate stations can be reduced to a relatively small number, and the country will greatly benefit.

Some of the conditions governing a cheap supply are set out as follow :—

(1) Combined generation within suitable areas.
(2) Well-situated stations, having regard to condensing water, fuel, and distance from consumers.
(3) Modern and large units of generating plant.
(4) Uniform standards of system, frequency, and pressure, so far as now practicable.
(5) Greater freedom for overhead wires and wayleaves.
(6) Good technical and business management.
(7) Adequate and cheap capital.

The concensus of evidence was that the need for one central authority to regulate generation and distribution is urgent, and that in the national interest steps should immediately be taken to establish it. This new authority, the committee suggest, should be known as the Electricity Commissioners. It is advised that they should be recommended by the President of the Board of Trade that they should be in direct communication with him, and through him responsible to Parliament. The Commissioners should in the first instance be five in number. Three should be appointed on the terms that they should not hold office beyond the age of 65 ; that they should have salaries of not less than £3,000 per annum ; and that their whole time should be given. They should also have adequate pensions. The other two might be appointed for a short term of years, and neither the age limit nor the right to a pension need apply to them. Engineering qualifications and business experience of the highest order should be represented in the *personnel*. The staff should include a secretary and such electrical engineers and inspectors as may be necessary. The work at first, and for some years, is likely to be heavy, but it is probable that later three Commissioners will suffice. The whole expenses might be recovered from electricity undertakings by a charge levied *pro rata* to revenue.

The committee do not advise which areas should be dealt with first as regards re-organisation. They point out, however, that the question is very urgent in the Lancashire district, where interconnection of existing stations has been considered, although it has not been possible to carry it out. The same urgency applies to the area around and including Birmingham, and to certain Yorkshire industrial districts. In London the matter has been pressing since 1905, when the question was raised in Parliament.

District Electricity Boards should have power to acquire generating plants of magnitude at present owned by railways, tramways, or other public utilities, and the supply to these undertakings should be combined with that to other consumers. Main line electrification will undoubtedly come. Meantime, large extensions of the use of electric power for railways in connection with urban, suburban, and special goods traffic are imminent. The importance of combining the supply to railways, tramways, and other consumers is beyond doubt, and they believe that each will benefit thereby. Combination will also save duplication of capital expenditure on reserve plant.

In view of the fact that the numerous investigations of the Reconstruction Committee and their proposals must for their practical effect largely depend upon cheap power, the committee emphasise the importance of initiating legislation with the least delay. Their chief recommendations are as appended :—

(*a*) That a new body, to be called the Electricity Commissioners, should be set up, to whom should be transferred the existing powers of the Board of Trade, Local Government Board, Local Government Board for Ireland, and Scottish Office, relating to the supply of electricity, and to whom large additional powers should be given for regulating and encouraging generation and distribution.

(*b*) That the Commissioners should, subject to an appeal in Parliament in certain cases, have general control over the generation and distribution in the United Kingdom.

(*c*) That the existing system under which electricity is separately generated for small areas should be abolished.

(*d*) That the Commissioners should, after local inquiries, divide the United Kingdom into districts technically suitable for economical generation and distribution.

(*e*) That in each electrical district a District Electricity Board should be set up which should purchase all stations of authorised distributors, whether local authorities, companies, or power companies.

(*f*) That the District Electricity Board should be responsible, by themselves or their lessees, for the generation of electricity in their district, and for the establishment of new stations and proper systems for the main transmission of electricity in their district.

(*g*) That existing electrical undertakers should, if they so desire, retain their power of distributing within their local areas, but should purchase in bulk from the District Electricity Boards or their lessees, due provision being made for controlling the profits of distributors, so as to ensure a cheap supply to consumers.

(*h*) That District Electricity Boards should make no divisible profits.

(*i*) That District Electricity Boards should be financed, in whole or in part, by funds raised with Government assistance, except where it is shown to be desirable and practicable to finance the Boards locally.

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(*j*) That largely extended powers should be granted for, *inter alia*, (a) the use of overhead wires; (b) wayleaves; (c) acquisition of water rights.

The District Boards would (a) acquire all generating stations and main transmission systems within their districts (excepting stations for private supply); (b) link up and develop the supply of electricity; (c) erect new stations as and where necessary; (d) acquire and utilise wherever practicable surplus electricity and waste gas and heat and other sources of power.

The report is signed by the chairman (Sir Archibald Williamson) and all the other members, namely:—Mr. Harry Booth, Mr. J. F. Crowley, Mr. James Devonshire, Mr. Harold Dickinson, Mr. James Falconer, M.P., Mr. G. H. Hume, Mr. John Kemp, Mr. E. F. Vesey-Knox, K.C., Mr. H. Law, Mr. C. H. Merz, the Hon. Sir Charles Parsons, Mr. William B. Smith, Sir John Snell, Alderman C. F. Spencer, and Mr. A. J. Walter, K.C.

TRAMWAY AND VEHICLE WORKERS' CONFERENCE.

A conference of the Amalgamated Association of Tramway and Vehicle Workers was held in Birmingham on May 28, when the Lord Mayor (Alderman A. D. Brooks) extended a civic welcome to the delegates. Speaking of the national importance of the industry in which they were engaged, Alderman Brooks said that the provision of a well-managed and conducted tramway service was an important factor in the development and extension of communal life. He was one of those who believed that municipal tramway undertakings should be carried on on commercial lines, and that means should be adopted to provide a full and adequate return for labour, for enterprise, and for capital, as well as to afford facilities for the public.

We were living under abnormal conditions, and could not obtain quite a fair view of what was likely to be the position in days to come; but one thing, he believed, was certain—namely, that the standard of life would be higher, that men of all classes would have to pay more for the necessaries of life, and in doing so we could only look, and ought to look, for wages to go up in proportion He had had some experience with regard to labour problems and difficulties, and he was glad to say he had found that in almost every instance differences could be adjusted if the parties would come together in a reasonable spirit. Personally he believed that a great advantage was to be derived from combination, both on the part of employers and workmen, and as time went on there would be an increased tendency for these combinations to be set up.

Extension of the 12½ per Cent. Bonus Demanded.

In a presidential address dealing with the work of the past year, Mr. E. H. Bawden said he questioned if there had ever been a period in the history of the association when so much had been accomplished. Matters of vital interest to the whole of the members had not only been initiated but carried through to their logical conclusion. Referring to the affiliation with the National Transport Workers' Federation, Mr. Bawden said the society by that act had attained a position of power and influence second to none in the country. As the result of the war they would be faced by problems in the future greater than those which faced them to-day. The step which had been taken was necessary if they were to maintain after the war, when the supply of labour was greater, the position which had now been reached. He mentioned that they had applications pending for the extensions of the 12½ per cent. to all tramway workers and for bringing up the rates paid to women employees to a standard equal to that of the men. It had been promised that the women should have the same wages and conditions, and they would not be satisfied until that promise was fulfilled. An application was also pending for the extension of the 12½ per cent. to the carters. He believed all these would be agreed to. On the subject of industrial councils, the speaker pointed out that they would not serve with the Municipal Employees' Association, because it was felt that as they accepted employees eligible for membership of their societies it was an unnecessary addition to trades.

The Question of Non-Unionists.

The question of non-unionists was raised by Mr. Walters (London) who asked that permission should be given by the executive for branches to go forward with the matter.

The President pointed out the advisability, as far as London was concerned, of dealing with the whole area instead of sectionally.

The Assistant Secretary said the executive and headquarters were in sympathy with the effort to eliminate non-unionists, but it was probable that would be secured by the formation of industrial councils without their having any friction with any particular management. It would then have to be a condition of employment that employees must automatically become members of their trade union.

Mr. McLean (Rochdale) urged that the industrial councils would take some time to establish, and in any national action there would be nothing which would hamper their work so much as this question.

It was also pointed out that in some places there were no non-unionists at all. At Burnley, it was stated, no member of the association would teach the duties of a driver or a conductor to any person who was not a member of the branch.

Women Drivers.

On the question of women car drivers, Mr. S. Hirst (general secretary) stated that several interviews had taken place with the National Service Department officials; but the executive of the association had taken a definite stand on the matter, and decided that under no circumstances would they give permission for the employment of women as drivers of tramway cars.

The National Service Department had promised to consider the question of placing the tramway industry in the list of protected occupations and to fix an age limit.

The scheme for amalgamation with the London and Provincial Union of Licensed Vehicle Workers was accepted with certain reservations. The conference also approved of the Executive's action in becoming affiliated with the National Transport Workers' Federation.

FINANCIAL REPORTS AND MEETINGS.

Auckland Electric Tramways Company, Limited.—An interim dividend at the rate of 5 per cent. (6d. per share), less tax, has been declared on the ordinary shares.

Stewarts and Lloyds, Limited.—A resolution has been passed increasing the capital to £3,100,000 by the creation of 350,000 deferred shares of £1 each, of which half are to be issued.

Blackburn Corporation Tramways.—The results for the year ended March 25, 1918, show a profit of £4,531 compared with a loss of £2,440 last year. The balance has been carried to the permanent way renewals fund.

Chloride Electrical Storage Company.—A dividend of 10 per cent. per annum, free of tax, has been declared on the ordinary shares for the year ended March 31. For the preceding year 10 per cent. was paid, with 100 per cent. script bonus.

Bolton Tramways Committee have agreed to allocate £15,500 in aid of the rates, this being the amount estimated to be available for the purpose at the beginning of the year. The estimate for the year ending March, 1919, allows for a like sum to be paid to the rates.

Blackpool Corporation Tramways.—Mr. Charles Furness, the general manager, has reported to the Tramways Committee that the result of the past year's work is a total income of £119,339, as compared with £96,228 for the previous year. The revenue was the highest ever recorded. The working expenses amounted to £68,456, and there is a disposable balance of £31,518, which compares with £21,182 for the previous year. The number of passengers was 20,277,535.

Depreciation Allowances at Glasgow.—On the advice of the general manager, the Tramways Committee recommend that the sums to be set aside for depreciation for the year ended May 31 should be as under:—Permanent way, £400 per mile of single track, £78,510 18s. 2d.; power-stations and sub-stations plant, 3 per cent., £13,915 5s. 9d.; cars and electrical equipment of cars, 5 per cent., £27,923 13s. 2d.; other rolling stock, 15 per cent., £2,829 17s. 9d.; Clyde Bank bridges, 5 per cent., £550—a total of £123,729 14s. 10d.

Dundee Corporation Tramways.—Mr. G. A. Johnston, convener of the Tramways Committee, alluded at a recent Council meeting to the satisfactory accounts for the year. They were, he said, satisfactory because the revenue had gone up £10,000, but it had nearly all been swallowed up by increased costs. He thought it was very creditable that they had been able to carry on so far without an increase in fares. It had to be kept in view not only that there was now a great increase in the cost of repairs, but that after the war a large expenditure would have to be incurred in reconstruction.

Brighton Corporation Tramways.—The result of the past year's working is again very satisfactory, and reflects the exceptional prosperity that Brighton is now enjoying. There is a net profit of about £16,000, or more than double the record profit of £7,251 for the previous year, and the appended table shows the revenue and net results, after meeting all charges, since 1903:—

Year.	Revenue.	Profit or Loss.	Year.	Revenue.	Profit.
	£	£		£	£
1903-4	46,264	—4,778	1910-11	50,747	137
1904-5	50,339	— 321	1911-12	54,028	26
1905-6	51,620	1,615	1912-13	53,798	931
1906-7	50,652	2,410	1913-14	56,838	842
1907-8	47,200	— 969	1914-15	56,525	18
1908-9	47,809	—2,420	1915-16	57,936	2,230
1909-10	51,358	1,190	1916-17	64,819	7,251

Nelson Corporation Tramways.—In his report for the year ended March 31, 1918, Mr. G. F. Nayler, electrical engineer and manager, states that there was a loss in the electricity department of £1,987, while the profit on the tramways amounted to £615. The year has been one of great difficulty owing to the high price of material and coal freightage. Another factor was the bad condition of the lighting battery for much of the year, owing to the delay in obtaining permits from the Ministry of Munitions for lead. The difficulty

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of maintaining the rolling stock has been very great, as for almost every class of goods a permit had to be obtained from the Board of Control. The system of clocks for the more accurate checking of the arrival and departure of cars at the termini has been found of great assistance.

Shanghai Electric Construction Company, Limited.—The report for 1917 states that the profit amounted to £67,504, against £48,123. Including £2,510 brought forward, the credit before making appropriations was £70,014. There have been transferred to reserve for renewals £10,000, and to the preliminary expenses account £5,000. The directors recommend a final dividend of 5 per cent. (less tax), making 10 per cent. for the year, and a bonus of 2½ per cent. (free of tax), leaving to be carried forward, subject to excess profits duty, £15,014. The loss by exchange on subsidiary coinage in 1917 was £35,478, equal to 11·09 per cent. on the capital. The ratio of depreciation to gross takings was sensibly lower than for several years past. Traffics and net receipts for the current year continue to be satisfactory. An arrangement was made with the Municipal Council to commute the company's liability for road maintenance by payment of an annual sum.

Madras Electric Tramways, Limited.—The accounts for the year ended December 31, 1917, show a gross profit of £27,830. After deducting interest and London office expenses, making provision for the debenture stock sinking fund, and transferring £8,000 to depreciation and renewal accounts, there remains a balance of £13,522, and including the balance from last year of £4,315 there is a total available of £17,837. This sum has been dealt with as follows :—Dividend on preference shares to March 31, 1918, £6,000 ; interim dividend of 4 per cent. on the ordinary shares paid September 30, 1917, £2,290 ; further dividend on the ordinary shares of 4 per cent., £2,290 ; transferred to general reserve fund, £3,000 ; leaving a balance to be carried to next year's account, subject to excess profits duty (if any) of £4,256. The traffic receipts show an increase of 10·3, and the expenditure in Madras an increase of 6·8 per cent. over 1916. The debenture stock sinking fund now amounts to £9,129.

Bolton Corporation Tramways.—The accounts for the year ended March 31, 1918, and for the previous three years are briefly tabulated below :—

Year Ended March 31.	1918.	1917.	1916.	1915.
	£	£	£	£
Traffic revenue	176,786	151,847	140,948	140,182
Sundry revenue	600	1,084	1,142	1,228
Total	177,386	152,931	142,090	141,410
Traffic expenses	38,838	32,057	27,837	30,044
General expenses	11,286	10,475	9,069	9,084
Repairs and maintenance ...	30,191	19,342	16,910	15,912
National Insurance	295	286	307	402
Power expenses	21,921	20,922	19,466	20,689
Balance to net revenue	74,855	69,849	68,501	65,279
Car-miles run	2,692,052	2,678,957	2,603,764	2,886,180
Traffic revenue per car-mile ...	15·761d.	13·603d.	12·992d.	11·656d.
Passengers carried	39,581,828	34,477,902	31,839,150	31,370,166

Manchester Corporation Tramways.—The following is a summary of the Manchester tramway results for the year ended March 31, 1918, and the three preceding years :—

Year Ended March 31.	1918.	1917.	1916.	1915.
	£	£	£	£
Traffic revenue	1,108,165	965,829	925,301	887,762
Miscellaneous	9,811	9,809	9,680	9,687
Motor omnibuses	1,563	158	1,083	786
Parcels	323	2,881	3,405	3,639
Total	1,119,862	978,677	939,469	901,875
Traffic expenses	282,550	275,282	261,689	273,002
General expenses	89,615	89,823	88,052	85,809
Repairs and maintenance ...	109,155	96,114	81,755	85,280
Power expenses	148,899	137,523	129,941	128,350
War service allowances	156,936	91,023	92,808	31,763
Balance to net revenue	332,706	288,910	285,222	297,670
Car-miles run	18,540,585	18,338,302	18,486,440	19,155,051
Revenue per car-mile	14·496d.	12·773d.	12·197d.	11·3d.
Passengers carried	240,914,369	219,151,984	209,877,667	202,768,420

Oldham, Ashton and Hyde Tramways Company.—The report for the past year states that the revenue amounts to £42,706, and the expenditure (including £1,408 for debenture interest) amounts to £26,888, leaving a net profit of £15,817, which, added to £2,782 brought forward, makes an available balance of £18,589, which the directors propose should be applied as shown in the accounts, viz. :—To be placed to reserve fund (raising the fund to £43,956) £10,000 ; to dividend at the rate of 5 per cent. for the year on the cumulative preference shares, £2,500 ; to dividend on the ordinary shares, at the rate of 6 per cent. for the year (in respect of which an interim dividend for six months at the rate of 5 per cent. per annum has been paid), £3,000 ; to be carried forward, £3,099. On January 28 the Corporation of Hyde gave the company notice that they intended to exercise their statutory powers to purchase that portion of the company's tramways, about 1 mile 5 furlongs, within their area, and negotiations are now proceeding with the Corporation. The other local authorities, in whose areas the remainder of the track, about 6 miles 2 furlongs, is situated have passed the necessary statutory resolutions, and have applied to the Board of Trade for their approval to a proposed service of notices, under Section 43 of the Tramway Act, 1870, requiring the company to sell to the local authorities so much of the company's tramways and undertaking as is within their respective areas.

Liverpool Corporation Tramways.—The results for the year ended December 31, 1917, compared with those of the four preceding years are as follow :—

	1917.	1916.	1915.	1914.	1913.
Capital expenditure ...	£2,068,430	£2,068,453	£2,068,453	£2,062,391	£2,024,707
Loan outstanding ...	998,244	1,008,694	1,212,713	1,168,685	1,177,384
Traffic revenue	818,756	738,321	696,893	684,026	677,881
Total revenue	845,645	766,577	726,078	722,307	715,120
Working expenses ...	575,267	518,037	488,274	473,678	451,667
Gross balance	270,378	248,540	237,804	248,629	263,453
Net profit	167,243	145,971	123,193	134,821	154,163
Average fare per passenger...	1·137d.	1·124d.	1·109d.	1·127d.	1·129d.
Traffic receipts per track mile	£6,602	£5,954	£5,620	£5,516	£5,695
Traffic receipts per car-mile	15·56d.	13·97d.	13·20d.	12·02d.	12·10d.
Power cost per car-mile	2·584d.	2·490d.	2·348d.	2·171d.	2·164d.
Operating costs per car-mile	10·880d.	9·798d.	9·240d.	8·323d.	7·977d.
Total charges per car-mile	12·890d.	11·738d.	11·409d.	10·322d.	10·015d.
Ratio of expenses to revenue	68·02%	67·5%	67·2%	65·6%	63·2%
Total track mileage ...	124	124	124	122	119
Number of cars in stock	598	598	599	596	595
Car mileage	12,630,577	12,688,163	12,682,018	13,657,888	13,442,805
Passengers carried ...	172,842,494	157,636,595	150,755,680	145,656,374	144,085,927

Para Electric Railways and Lighting Company.—In the absence of Mr. Follett Holt, who is abroad on work of national importance, Mr. F. M. Voules presided at the annual meeting. Referring to the delay in holding the meeting, he said it was due to the difficulty of communication with Para, but as the results of the financial year warranted such a course, the directors had decided to pay further interim dividends on both classes of shares. The report had since come to hand. The ordinary dividend of 7 per cent. constituted an advance of 1 per cent. over last year's rate. As a director of the company since its inception, it was a matter of special gratification to him to see the sound basis on which the company was now established. It reflected the greatest credit on their local managers and on their London managers, Messrs. J. G. White and Company, Limited. The company's business showed an encouraging development both in the tramway and the lighting departments, the net receipts in local currency in both departments constituting a record. The number of passengers carried was over twenty-two millions, and the sale of electric current for motive and lighting power was 10 per cent. higher than in 1916. A further economy had been obtained in operating expenses, notwithstanding the special difficulties incident to the war. In the circumstances the company's cash position was satisfactory. They had invested £25,000 in War Loan and £20,000 in War Bonds. They had abundant proofs that the Government and the municipal authorities appreciated the company's untiring efforts to serve the community.

London and Suburban Traction Company.—Presiding at the meeting on June 5, Lord Stuart Wortley said that the cause of the diminished net revenue was the ever-growing cost of operation Wages paid by the operating companies in their group, exclusive of omnibus undertakings, which were worked for them by the London General Omnibus Company, amounted in 1913 to £330,000 and in 1917 to £403,500. They had to face a further diminution of revenue from the effect of the new Lighting, Heat, and Power Order, 1918, which would curtail the consumption by private users of the current they had to sell. The tramways undertakings also would have to assist in securing economy in coal, which could be done only by reducing the services. A more hopeful matter for the future was that the efforts to reduce wasteful competition between the tramways and the omnibuses of the London General Company were now much nearer realisation. The report shows a substantial reduction in the returns. The net revenue of the tramway and omnibus companies have in nearly every case been adversely affected by the war, the increase in tramway receipts being more than balanced by increased expenses of operation. The revenue, consisting almost entirely of dividends and interest from subsidiary companies, amounted to £81,519. After deducting expenses chargeable to revenue, including debenture and loan interest, and providing for sinking fund charges upon the 5 per cent. debenture stock, there is a balance of £39,037, making, with £4,684 brought forward, a total of £43,721. Out of this source a dividend on the preference shares at the rate of 2½ per cent. is paid, and £3,634 carried forward. The London United Tramways Company, for which a receiver was appointed in June last, are promoting a Bill to secure an extension of their tenure of the tramways and an increase in fares. Subject to the passing of the Bill, a scheme for the reorganisation of the capital of the company has been provisionally agreed, under which funds will be provided for the reconstruction of the permanent way and renewal of rolling stock and equipment.

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PERSONAL.

Mr. A. Baxendale has been appointed car shed superintendent of Rawtenstall Corporation Tramways.

Mr. T. R. Smith, chief electrical engineer at Leicester, has been granted an increase in salary from £900 to £1,000.

Mr. A. R. Carter, assistant borough surveyor, Blackpool, has been appointed temporary acting surveyor at a salary of £400 a year.

Sir C. Stewart Wilson has been appointed a director of the Bengal-Nagpur Railway, in succession to the late Mr. A. H. Campbell.

Mr. E. C. Okell, electrical engineer of Plymouth Corporation, has been granted an increase in salary of £50, to £700 per annum.

Mr. J. Barnard, general manager of the Bolton Corporation Tramways, has been granted an increase in salary from £525 to £700 per annum.

Mr. R. H. Dyer has been appointed acting borough engineer and surveyor to Southend Corporation, pending the making of a permanent appointment.

Mr. J. S. Huddleston has resigned his position with Messrs. Siemens and Company, and has been appointed general manager to the Union Cable Company.

Mr. R. B. Donal has been appointed borough engineer and surveyor of Wigan, having resigned his position as chief engineering assistant to Huddersfield Corporation.

Mr. S. S. Platt, who has been borough surveyor of Rochdale for thirty-seven years, has resigned owing to ill-health. His resignation will take effect on October 3.

Mr. H. Cobden Turner, of the British Westinghouse Electric and Manufacturing Company, has been appointed manager of Salford Electrical Instruments, Limited.

Mr. T. O. Callender, managing director of Callenders' Cable and Construction Company, Limited, has been knighted for active leadership in local patriotic work.

Mr. George A. Newsome, of the Dumbarton Burgh and County Tramways, has been appointed manager of Darwen Corporation tramways at a salary of £250 per annum.

Mr. R. L. Ferguson, of the motor branch of the Munitions Inland Transport, has been appointed chairman of the London Divisional Committee of the Road Transport Board.

Mr. J. N. Wilson has resigned the position of secretary to the Tramways (Board of Trade) Committee, and has resumed his duties as secretary to Glasgow Corporation Tramways.

Mr. H. C. B. Underdown has been appointed president, and **Mr. Bernard Caillard** vice-president, of the Association of British Motor and Allied Manufacturers for the ensuing year.

Mr. C. J. Spencer, general manager of Bradford Corporation Tramways, has been recommended by the Tramways Committee for an increase in salary from £800 to £1,000 per annum.

Mr. E. S. Rayner, at the request of Doncaster Electricity and Tramways Committee, has been released by the Admiralty, and has resumed his duties as electrical engineer and tramways manager.

Sir William Pearce, M.P., was the chairman of the Select Committee of the House of Commons, appointed on April 23, to consider the question of raising the statutory maxima of tramway fares.

Mr. Isaac Hirst has been presented with an oak barometer by the employees of Keighley Corporation Tramways department on his retirement from the post of traffic superintendent, after fourteen years' service.

Mr. W. H. Wilson has been appointed secretary of the London Electric Supply Corporation, in succession to Mr. H. C. Carter, who has retired owing to ill-health. Mr. Wilson has been connected with the company since 1906.

Mr. P. Priestly, manager of Oldham Corporation Tramways, who was recently appointed deputy manager of the Liverpool Corporation Tramways, has been presented by the employees at Oldham with a cabinet of cutlery.

Mr. P. P. Wheelwright, borough electrical engineer, Blackburn, has been nominated by the Corporation at the request of the Controller of Mines to undertake the inspection of works and factories in the locality in connection with economy in coal consumption.

Mr. C. H. Smythe, who has been chief assistant engineer of the electricity department of Marylebone Council, has been appointed acting chief engineer in succession to Mr. A. H. Seabrook, who recently resigned to take up a position of national importance.

Mr. L. E. Pickin, who for the past eighteen years has been secretary of the United Electric Car Company, Limited, of Preston, has resigned that position to take up an appointment as general manager of an important manufacturing company in the London district.

Second Lieutenant W. McCallum, R.E., has been awarded the Military Cross. Previous to joining the forces, Lieut. McCallum was a member of the engineering staff of Messrs. Dick, Kerr and Company. He is a B.Sc. of London University, where he graduated with honours in the Faculty of Engineering.

Mr. Guy Calthrop is one of the new baronets included in the King's birthday honours. Formerly general manager of the London and North Western Railway, he has given valuable services as Controller of Coal Mines, and is head of the department of the Board of Trade which has control of the coal mines of the United Kingdom.

Colonel R. E. B. Crompton, C.B., who has been chairman of the Commercial Motor Users' Association for about fifteen years, has been nominated by the general committee of the Association as its president. **Mr. E. S. Shrapnell Smith,** who has been honorary treasurer of the association since its formation in 1913, is the new chairman of the committee.

Sergeant A. Oakley, Gloucester Regiment, who, before enlisting in 1915, was a driver on Hull Corporation Tramways, has been awarded the Belgian Croix de Guerre for gallantry. After being in France for sixteen months he was home on leave in February. Since returning to France he has been wounded, and has been in hospital suffering from gas and shell shock.

Mr. J. Cameron, general manager of Northampton Corporation Tramways, reported to the Council that Mr. W. E. Owen, superintendent of the power-station, had resigned. Before filling the position he was making application to the military authorities for the release of Mr. E. Jordan, former power-station superintendent, who has been passed as fit for home service only.

Major Angus Macpherson, Machine Gun Corps, who before the war was in the employment of the Glasgow Corporation Tramway Department, has been awarded the Military Cross. He is a native of Carradale, Argyllshire, and went to France as a private in the original Expeditionary Force. He had already won the D.C.M., had been wounded three times, and mentioned in despatches four times.

Mr. J. Wilkinson, tramways electrical engineer, of Hull, has reported to the Tramways Committee that he had received a letter from the Controller of Coal Mines appointing him district engineer in connection with the coal economy campaign. Owing, however, to the present state of his health he was unable to accept the post, and subject to the approval of the Committee he nominated Mr. R. G. Elliott.

Newcastle Corporation Tramways Committee, at a meeting on May 30, at which Councillor R. Mayne presided, recommended the City Council to increase the salary of Mr. Ernest Hatton, engineer and general manager, from £1,000 to £1,500 by five annual increments of £100. It was stated that the proposed arrangement had been arrived at after comparison of the salaries paid to similar officials in other large cities.

Captain R. B. Wilmshurst, the youngest son of Mr. T. P. Wilmshurst, borough electrical engineer of Derby, has been awarded the Military Cross for gallantry in the recent fighting. Captain Wilmshurst, who is 21, was wounded at Bailleul on April 15. His eldest brother, Lieutenant A. P. Wilmshurst, is serving in Mesopotamia, and his second brother, Captain E. R. Wilmshurst, died in hospital at Rouen in 1916 from wounds received in the Somme battle.

Mr. Harrison Barrow, late chairman of the Birmingham Corporation Tramways Committee, has been sentenced to six months' imprisonment under the Government regulations for being a party, as acting chairman of the Friends' Service Committee, to the printing and publication of a pamphlet, "A Challenge to Militarism." The leaflet was issued without the name of the author, and no copy was submitted to the Press Bureau. Notice of appeal was given, and Mr. Barrow was allowed bail.

Mr. James Dalrymple, general manager of Glasgow Corporation Tramways, has been recommended by a special committee for an increase of £200 in his salary of £1,300 per annum. Mr. Dalrymple is approaching the completion of his 37th year in the service of the Corporation, and his work in the tramways department, and for recruiting and war charities, has been very heavy during the war. In the use of women as car conductors, drivers, and cleaners he may be said to have taken the initiative in the United Kingdom.

Captain J. S. Hamilton, D.S.O., who was mentioned in General Haig's last despatches, is the second son of Mr. J. B. Hamilton, general manager of the Leeds City Tramways. Soon after the war broke out Captain Hamilton left his technical work in the tramway department and volunteered as a private. Later he received a commission, and was attached to the West Yorkshire Regiment, in which he has seen continuous service for many months. In December last he was awarded the D.S.O. for conspicuous gallantry.

Sapper A. Ramsden, 32nd Divisional Signal Company, R.E., attached to the 168th Brigade, R.F.A., has been awarded the Italian Bronze Medal for Military Valour, "for conspicuous fearlessness and exemplary determination in devotion to duty," in repairing telephone wires under very heavy shell fire and gas shell fire at Nieuport, on the Steenbeck, and near Bixschoote. "His consistent bravery in action" is stated to be "of high moral value to his unit." Before the war Sapper Ramsden was a driver on Huddersfield Corporation Tramways.

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Presentations to the King.—Two presentations to the King and Queen which will be read with interest were made during their visit to the textile industries on May 31. At the reception of the royal party in the Victoria Hall, Leeds, the members of the City Council presented included Alderman R. A. Smithson, chairman of the Tramways Committee. During the visit to the Phœnix Dynamo Manufacturing Company's works on the outskirts of Bradford, the members of the Bradford National Munitions Factory Board of Management were presented, including Mr. C. J. Spencer, general manager of the Corporation Tramways of that city.

Major Arthur Watson, superintendent of the line, has been appointed also assistant general manager of the Lancashire and Yorkshire Railway Company. Major Watson in 1890 was articled as civil engineer to the chief engineer of the railway. He served as assistant resident engineer from 1893 to 1897, becoming subsequently divisional engineer for Manchester and resident engineer in charge of extensive construction work. He was appointed chief assistant engineer in 1905, and held that position until he became superintendent of the line in 1911. In 1914 he was appointed a member of the Railway Executive Committee, and was granted a commission as Major in the Railway Engineers' Staff Corps.

Alderman Sir Charles Petrie, J.P., who has been created a baronet, is one of the most honoured and respected citizens of Liverpool. He has been a member of the City Council for over twenty-six years, and was chairman of the Tramways and Electric Power and Lighting Committee until about five years ago, being subsequently appointed chairman of the Finance Committee. It was during his chairmanship of the Tramways Committee that practically the whole of the reconstruction of the system was carried out. He was elected Lord Mayor for the year 1901-2. Last year he was made a Freeman of the city, and a presentation was made to him. Sir Charles is a vice-president of the Tramways and Light Railways Association, and a director of the Singapore Electric Tramways Company, Limited.

Mr. J. B. Hamilton, general manager of Leeds Corporation Tramways, has taken charge at the request of Lord Rhondda of a new department to be called the General Storage and Inland Transport Department, which will co-ordinate the work of all existing branches of the Ministry of Food at present dealing with these questions. The Leeds Tramways Committee consented to release Mr. Hamilton temporarily in order to allow him to act as transport and storage officer, and expressed satisfaction that his services have been so much appreciated. Mr. Hamilton has previously been engaged in work for the Admiralty, and is now a member of the Tramway (Board of Trade) Committee. As hitherto, he will be in Leeds for week-ends to deal with any pressing business connected with the tramways.

Herr Arnold Von Siemens, chairman of Siemens and Halske, died at Berlin on April 29.

Major A. G. Parsons, R.F.A., only son of the Hon. Sir Charles A. Parsons, was killed in action on April 26.

The death is announced of **Mr. Charles C. Howard,** who was general manager of Bolton Corporation Tramways until 1916, when he retired.

Captain George Leonard Andrews, R.G.A., who was killed in action on May 3, gave up an important position in the Pernambuco Tramways and Power Company to join the army. He served in France and Egypt. For a year he had been engaged in training Portuguese in gunnery, a work involving the translation of the necessary text-books from the English, and he returned to the front only a month before his death. Captain Andrews, after receiving the degree of B.Sc. at the University of London, took the degree of Bachelor of Engineering at Sheffield University. Subsequently he held positions with the tramway companies of Kidderminster, Madrid, and Lisbon, and later became manager of the Para Electric Railways and Lighting Company and of the Pernambuco Tramways and Power Company.

CONTRACTS AND ORDERS.

The British Thomson-Houston Company's tender for a rotary converter at £4,884 has been accepted by Cardiff Corporation.

Nova Scotia Tramways Power Company, of Halifax, N.S., is reported to be considering the purchase of cars, equipment, and generating machinery.

Bolton Corporation have accepted the following tenders:—Morgan Crucible Company, carbon brushes; Universal Wheel Grinding Company, emery wheels; British Insulated and Helsby Cables, cables and insulating wire; General Electric Company, jointing material, tape, and solution; Credenda Conduits Company, steel conduits and fittings.

Manchester Electricity Committee have accepted the following tenders:—Ferranti, Limited, two 3,000-k.v.a. three-phase static transformers; W. T. Glover and Company, and the Western Electric Company, supply of cables; Callender's Cable Company, supply and laying of 33,000-volt cables; F. Morton and Company, steel work for 20,000-kw. turbo-generator.

TRAMWAY AND LIGHT RAILWAY NOTES.

DUBLIN.

WAGES AWARD.

Mr. J. B. Bailie, the arbitrator in the application of the National Transport Workers' Federation and the Amalgamated Association of Tramway and Vehicle Workers, on behalf of their members employed by the Dublin United Tramways Company, awarded a 20s. advance on pre-war rates of wages, which is to include advances made since the war. The following is the award:—

(1) That those employees concerned whose aggregate advances since the war do not exceed 15s. over pre-war weekly wages shall receive a further advance of 5s. per full ordinary week. (2) That (subject to Clause 3) those skilled employees engaged at the power-station, overhead department, and Ballsbridge works, who are concerned and whose aggregate increases since the war are in excess of 15s. over pre-war weekly wages but less than 20s., shall receive such further weekly increase over the aggregate advances made in their respective grades as shall produce 20s. increase over the pre-war weekly wages. (3) That the advances do not apply to traffic, motor, or ticket inspectors, time-keepers, the tradesmen at Ballsbridge works, the cable department, and the workmen at the Inchicore works. (4) That the advances shall be reckoned in the calculation of all overtime as ordinarily understood by the company. (5) That the advances shall be considered to be due to and dependent upon the abnormal economic situation created by the war and the increased cost of living; and (6) that the advance shall be deemed to have come into operation on the pay-day of the week commencing April 8, and shall be payable for the week preceding and thereafter.

EDINBURGH.

ARBITRATION BETWEEN CORPORATION AND COMPANY.

According to local reports it is probable that an important arbitration will take place between Edinburgh Corporation and the tramways company in regard to the state in which the undertaking is to be handed over to the Council at the coming expiry of the lease. The undertaking, it is provided, is to be left in workable order, and the Corporation view is that about 25 miles of the line should be relaid. The company consider that only five miles require relaying. The respective costs are put at about £120,000 and £25,000. Sir Alex. Kennedy is to be the arbitrator. The lease of the company expires in June, 1919.

GALWAY.

TRAMWAYS FOR SALE.

Tenders were recently invited for the assets of the Galway and Salthill Tramways Company as a going concern, consisting of the line of tramways, which cost over £16,000, the premises at Forster Street, Galway, the cars, and other assets of the company. The liquidator is Mr. Michael Crowley. It has been reported that some of the members of Galway Town Council are in favour of purchasing the undertaking with a view to the electrification and extension of the tramways as early as practicable.

HUDDERSFIELD.

A PROTEST AGAINST WOMEN DRIVERS.

The local branch of the Amalgamated Association of Tramway and Vehicle Workers have protested against the employment of women as tramway car drivers.

LEEDS.

COLLECTION OF TICKETS—EXTENSION OF PARCEL TRAFFIC.

Passengers on the tramways are being asked to place their tickets in small boxes on leaving the cars. The quantity of tickets used last year was about 124 millions. The parcel carrying scheme is to be extended by the opening of additional depots on various sections. It is proposed to allow 5 per cent. discount to purchasers of parcels carrying stamps of £5 and upwards, and monthly accounts are to be allowed on contracts.

LIVERPOOL.

AN AID TO FARE COLLECTION—ADDITIONAL CARS.

A suggestion is made by a Liverpool correspondent that passengers should provide themselves more generally with pence, and so avoid harassing the conductors to change florins and half-crowns. The time lost owing to conductors having to give change is in the aggregate considerable, and in these days when the cars are crowded the extra work adds greatly to the conductors' duties. Mr. C. W. Mallins, general manager, has reported to the Tramways Committee that he has obtained a priority certificate for certain materials which are required to enable him to place four additional cars on the Everton and North Docks route.

NEWCASTLE-ON-TYNE.

REDUCTION IN TRAMWAY ASSESSMENT.

By agreement with the Assessment Committee, the rateable value of Newcastle Tramways has been reduced by £13,500.

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PLYMOUTH.

MEN RESUME WORK AFTER A TWELVE-HOUR STRIKE.

On Saturday, May 18, the employees of the Corporation Tramways ceased work without notice. Dockyard men found no cars to convey them to their work, and the public were greatly inconvenienced. The trouble appears to have arisen out of a quarrel between two labour unions. Mr. C. R. Everson, general manager of the tramways, on the Friday evening received a letter from the tramways branch of the Dockers' Union notifying him that at a meeting on May 15 the Union had decided that in the event of certain employees refusing to become members of their Union by 6 p.m. on Friday (May 17), they would refuse to work with them after midnight on that day. The Town Council had previously passed a resolution declaring that it was not their duty to coerce any man into joining a union. On the Saturday afternoon the Tramways Committee met a deputation from the Municipal Employees' Association, to which the few men whom the strikers wished to force to join the Dockers' Union belonged, and told them that there was no objection to the employees resuming work unconditionally, the committee agreeing to consider any grievances. About 6 p.m. work was resumed, the men having been on strike for about twelve hours. The employees of Plymouth, Stoneho use, and Devonport Tramways Company came out in sympathy with their disaffected co-unionists. This senseless and unpatriotic strike was the first experience of the kind within the manager's twenty-five years' experience. Hitherto the relations of the Corporation with the men have been free from friction, a fact which makes the action of the employees wholly without excuse.

PRESTON.

PURCHASE OF ADDITIONAL CARS.

The Town Council intend to purchase six additional cars from Sheffield Corporation. The cars are single-deck, and are required to meet the greatly increased traffic.

SCARBOROUGH.

CARRIAGE OF FISH BY TRAMWAY.

Scarborough Electric Tramways Company propose to carry fish on the tramways from the piers to the goods station, and the Government is to be asked to grant assistance toward the cost of laying down the additional track.

SHEFFIELD.

PETITION AGAINST THE CORPORATION TRAMWAYS BILL—A NEW USE FOR TRAMWAY PROFITS.

The National Union of Horse and Vehicle Owners and the Sheffield Horse and Motor Owners' Association have presented a petition against the Sheffield Corporation Bill, to which reference was made in a leading article in our issue of April 11. Adverting to Clause 141, which seeks to authorise the conveyance of animals, goods, minerals, and parcels, and to provide trucks, etc., for the convenient working and user of the tramways, the petitioners allege that their businesses, rights, and interests are injuriously affected by the Bill, and they object thereto. The service so provided by the Corporation, the petitioners state, would not afford any facilities which cannot be equally well or better provided by the members of the association. They deny that any public demand exists for enlarging the purposes for which the tramways can be used under the existing legislation, and they ask to be heard by counsel against the clauses to which they object and in support of clauses and amendments for their protection. The Sheffield Chamber of Commerce is in favour of the proposals contained in the Bill providing for the carriage of minerals, goods, and other commodities on the tramways so far as they relate to the exercise of the powers within the city limits. Outside the city area the Chamber is in favour of the Corporation obtaining powers to carry tradesmen's parcels of light weight, but not minerals or other goods of any kind. The committee of the City Council in charge of allotments proposes that out of the profits of the tramways £100 should be given for the purchase of prizes to be awarded at an exhibition of produce to the most successful of the 11,830 plot holders.

STOKE-ON-TRENT.

POTTERIES TRAMWAYS NOT TO BE PURCHASED.

Stoke-on-Trent Council have decided by 34 votes to 7 not to seal the proposed agreement between the Corporation and the Potteries Electric Traction Company for the future working of the tramways. Mr. R. J. Howley, chairman of the company, had an interview with the Council prior to the voting, and expressed disappointment that the agreement had not been signed. The company could not allow it to hang, seeing that they had sealed it and accepted it, and were now simply waiting for the Corporation to do likewise. The Council had been very hard. It had been a question of drawing tooth after tooth out of the company, but the agreement now before them was the last word.

The Sentinel Wagon Works, Limited.—The Shrewsbury branch of Alley and MacLellan, Limited, where the manufacture of the "Sentinel" steam wagons has been carried on for some time past, has now been registered as a new company under the title of the Sentinel Wagon Works, Limited.

PATENT LIST.

Abstracted for "The Tramway and Railway World" from the Official Journal of Patents.

***** If the inventions have been communicated the names of the communicators are given in italics.**

APPLICATIONS FOR LETTERS PATENT.

Devices for lubricating motors of motor vehicles (7,141)—C. E. Baggs and S. J. Thompson.
Indicators for signalling (7,427)—Barr and Stroud and C. D. Macgill.
Wheel tires for railway and tramway vehicles (7,303)—C. Coda.
Means for raising or jacking up vehicles (7,253)—B. Coles.
Lifting apparatus for motor vehicles (7,266)—F. Coultas and A. Pick.
Suction gas plant for use on motor vehicles (7,451)—R. W. Dench and J. Richardson.
Gas-driven vehicles (7,535)—A. Mond.
Auto vehicles (7,236)—W. G. Moore.
Lifting jacks, etc., for vehicles (4,254)—F. L. Rapson.
Omnibuses and tramway cars (7,296)—H. Smith.
Valves for gas, etc., containers for motor vehicles (7,482)—W. H. Tyas.
Electro-magnetic brakes (7,164)—E. C. Villiers.
Locomotive or car trucks (7,845)—British Thomson-Houston Company (*General Electric Company*).
Shock-absorbing mechanism for motor vehicles (7,900)—S. L. C. Coleman.
Electro-magnetic devices for use in signalling circuits (7,888)—J. J. Ghegan.
Electric signal systems (7,584)—C. E. Lyman.
Trolley heads for electric traction (7,905)—J. B. Parker and J. Smith.
Handling motor vehicle breakdowns (7,853)—A. W. Smyth and J. B. West.
Variable speed gearing (7,617)—E. Wainscott and H. G. Wainscott.
Driving mechanism for motor vehicles (8,337)—J. D. Allen.
Rear axles for motor vehicles (8,190)—S. E. Alley.
Brake gear for motor vehicles (8,083)—R. Anderson and R. N. Fairbanks.
Differential steering gear for motor vehicles (8,059)—G. M. Blackstone, E. Carter, F. Carter, and R. E. Watts.
Repairing equipments for motor vehicles (8,299)—A. M. Edwards.
Destination or route indicators for tramway cars, railway carriages, etc. (8,032)—T. Marsden.
Brakes for motor cars, etc. (8,217)—R. C. Pessell.
Electro-magnetically controlled signal reverser for railways (8,290)—W. R. Sykes Interlocking Signal Company and R. W. Tarrant.
Trollies or collectors for electric tramways, etc. (7,978)—E. R. Thomas.
Route indicators for use on railways, tramways, etc. (8,099)—C. H. West.
Couplers for vehicle running gears (8,443)—G. L. Bumgardner and H. A. Partridge.
High ratio speed reduction gear (8,683)—E. J. Davies.
Light motor vehicles (8,544)—G. A. Dunball.
Bodies for motor vehicles (8,599)—H. Hillman.
Trolley heads for electric tramways, etc. (8,581)—J. G. Small and others.
Power generators for motor cars, road locomotion, etc. (8,430)—T. M. Thomas.
Wheel tires and brake shoes of tramway and railway vehicles (8,441)—T. C. Way.

SPECIFICATIONS PUBLISHED.

1917.

Rail chairs (4,513—*105,241*)—D. H. Pettingell.
Motor-driven road vehicles (6,063—*114,502*)—H. Street.
Axle boxes of railway and tramway rolling stock and the like for effecting the lubrication of the axles (7,508—*114,522*)—T. F. Craddock (*Burn and Company*).
Electrically-driven road vehicles (8,937—*114,537*)—F. La Roche.
Heavy traction attachment suitable for motor road vehicles (10,397—*114,551*)—R. Reynolds and H. Gibbs.
Trolley wheels or collectors for electricity (12,412—*114,571*)—A. E. Alexander (*Ollard Trolley Wheel Company*).
Device for overhead electric trolley wires (13,726—*114,578*)—P. Dawson, F. W. Fawdry, and H. W. H. Richards.
Electric couplings (14,033—*110,908*)—H. de La Valette.
Motor road vehicles (3,511—*114,644*)—S. J. Murphy and T. L. McGee.
Regulation of fuel supply to internal combustion motor-driven vehicles (5,049—*114,656*)—N. Andrews.
Road wheels and tires for motor vehicles (5,074—*114,657*)—J. R. Churchill.
Hanging straps for electric cars (7,934—*114,710*)—M. Yamasaki
Variable speed gear (7,965—*114,711*)—J. F. Farris.
Control of variable speed and reversing gearing (7,987—*114,712*)—L. F. Godeau.

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Variable speed transmission gear (9,474—*114,728*)—T. Von Zweigbergk.
Power transmission devices (12,226—*111,284*)—L. Renault.
Automatic train control device (12,728—*114,410*)—W. V. Turner.
Variable speed and differential gearing (16,020—*114,778*)—U. Texier.
Fluid pressure braking apparatus (17,289—*114,785*)—W. V. Turner.
Gas storage chambers for motor propelled vehicles (17,600—*114,788*)—T. B. Cooper.
Change-speed gear (3,855—*114,865*)—A. T. Collier.
Light railways (5,248—*114,880*)—F. H. Dutton.
Working of signals by electric currents (6,053—*114,910*)—W. J. John and J. John.
Motor road vehicles (7,709—*114,931*)—G. F. Campion.
Apparatus for condensing and retaining compressed gas in a receiver for use in connection with motor vehicles (12,820—*114,966*)—W. Taylor,
Anti-skidding device for automobiles (14,519—*114,979*)—H. A. Dally and A. M. Crane.
Gas-generating appliances applicable for vehicles propelled by means of internal combustion engines (14,952—*114,983*)—H. A. Greaves and H. Etchells.
Change-speed mechanism (17,629—*114,995*)—E. Fehr and R. Reimann.
Motor truck attachments (18,063—*114,999*)—J. W. Shaw.
Motor road vehicles (7,232—*115,117*)—J. H. Forknall.
Transmission gear of motor vehicles (10,524—*115,152*)—W. Comery and Raleigh Cycle Company.
Wheels for motor vehicles (10,619—*115,153*)—W. Comery and Raleigh Cycle Company.
Automatic safety brake (12,287—*115,172*)—F. J. de Soto.
Change-speed and reversing gear (12,684—*115,175*)—A. T. Collier.
Elevated railways and tramways (14,017—*115,179*)—S. A. Rogers.

DIFFICULTIES OF OPERATION IN LIVERPOOL.

Mr. C. W. Mallins, general manager of Liverpool Corporation Tramways, reporting on the operation of the services during the past year, says the work was carried out with very great difficulty owing to the constant demand made by the military authorities for additional men, together with the ever-increasing difficulty of obtaining material and labour for repair and maintenance. There were 2,700 men employed in the department when the war broke out, and of that number 2,200 left the service to join the forces. The vacancies thus created had been filled as far as possible either by men incapable of military service or by women, a class of labour which would not, under normal conditions, have been engaged for the purpose, with the result that a very heavy strain had been placed upon those responsible for the operation of the service, as it was found most difficult to enforce discipline in connection with this class of labour. Nevertheless, looking at the problem as a whole, it must be admitted that the new class of labour—especially the women—rendered useful service to the community by coming forward at a time of great national stress.

It was not the curtailment of the service which brought about the present overcrowding and inconvenience. The overcrowding was the result of the enormous increase in the number of passengers who desired to travel by the cars as compared with pre-war times. The increase in the number of passengers who travelled by their system during the year 1917, as compared with pre-war years, amounted to 40,000,000. This enormous increase in the number of passengers was brought about by various causes, as for example the increase of 50 per cent. on the railway fares; the total abolition of certain local railway services, and the great reduction in others; the diversion of shipping from other ports to Liverpool, together with the increase in the Admiralty work now carried out in the port of Liverpool; and the great number of munitions of war, aircraft, etc., factories, which have come into operation in and around Liverpool where vast numbers of persons are employed, most of whom use the tramway service.

The Tramways Committee are, however, doing everything possible by impressing upon the Board of Trade and other Government departments the importance of granting the necessary facilities to obtain adequate material and labour to increase the tramway service in proportion to this great increase of passengers. On the whole, the public had borne the inconvenience without much complaint, knowing, as the majority obviously did, the great difficulty under which the system was being operated.

KEEP TO THE LEFT.

Huddersfield Corporation are attaching to the electric standards in the busiest centres of traffic regulation plates directing foot passengers to keep to the left. It will be recalled that the general adoption of this practice was vigorously supported at the meeting of the Municipal Tramways Association at Blackpool in September last. The object is to accustom pedestrians to face the traffic when stepping on to the roadway. There is no doubt that the change greatly increases the safety of the public.

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TRAFFIC RETURNS.

Tramway and Omnibus Undertakings in the United Kingdom.

NAME OF COMPANY OR CORPORATION.	1917. WEEKS ENDED. May 5.	May 12.	May 19.	May 26.		1918. WEEKS ENDED. May 4.	May 11.	May 18.	May 25.		AGGREGATE. Wks.	1918.	Increase or Decrease.
	£	£	£	£	£	£	£	£	£	£		£	£
Aberdare U.D. Council	386	...	...	406	...	473	...	...	626	...	7	3.764	—
Aberdeen Corporation	1.894	2.167	1.856	1,946	...	2.284	2.269	2.282	2.583	...	51	111.840	+ 15.772
Ayr Corporation	305	337	346	398	...	415	449	479	569	...	1	802	- 193
Belfast City	5,900	5.831	5,857	6.076	...	7.760	7.738	7.714	7.901	...	8	61,335	+ 14,922
Birkenhead Corporation ...	1.765	1.718	1.692	1,702	...	2.100	2.100	2.186	2.476	...	8	16.708	+ 3.431
Blackburn Corporation ...	...	1.374	...	1.336	...	...	1.672	1.643	2,954	...	8½	15.295	+ 5.102
Bradford Corporation ...	7,009	7.285	7,126	7.381	...	7.437	7,461	7.916	10.055	...	8	62.924	+ 6.466
Burnley Corporation... ...	1,766	1,750	1.737	1.760	...	2.059	2.109	2.070	2,786	...	—	—	—
Burton-on-Trent Corporation	267	265	278	293	...	379	383	418	470	...	8	3.181	+ 1.008
Bury Corporation	1,559	1,550	1,487	1.577	...	1.771	1.974	2,067	2,831	...	8	15.484	+ 3.019
Chatham and District ...	1,322	1.296	1.380	1.397	...	1.173	1.301	1.301	1.666	...	21	24.539	+ 708
Cork Electric	585	574	553	582	...	591	618	593	708	...	21	12,121	+ 2,171
Derby Corporation	1.108	1.123	1.119	1.211	...	1.397	1.460	1.564	1889	...	8	11.773	+ 2.988
Dundee City	1,397	1.457	1.391	1.432	...	1.621	1.589	1.634	1.965	...	1	1.965	+ 533
East Ham Corporation ...	1.378	1.383	1.966	1.356	...	1.401	1.403	1.447	1.764	...	7½	10.974	+ 43
Glasgow Corporation	25.915	26.044	25.573	26.711	...	28.069	28.385	29.508	30,356	...	51½	1.379.437	+158.209
Glossop (Urban Elec. Supply Co.)...	142	150	150	157	...	178	182	181	241	...	21	3.814	+ 1.054
Halifax Corporation	2,140	2.277	2.299	2,172	...	2.644	2.488	2.572	4.255	...	7½	20.119	+ 4.055
Halifax Corp. Motor Omnibuses	34	38	38	38	...	55	55	58	91	...	7½	445	+ 130
Huddersfield Corporation ...	2,934	3.047	2.983	3.127	...	3.475	3.481	3.544	5,490	...	8	30.068	+ 4,335
Ilford U.D. Council	709	706	884	754	...	931	935	989	1.297	...	8	7.686	+ 2.142
Ipswich Corporation ...	523	603	658	700	...	642	679	752	1,054	...	8	5.676	+ 1.605
Isle of Thanet	307	277	281	322	...	199	216	263	413	...	34	6.527	- 2,159
Kilmarnock Corporation ...	169	204	174	173	...	226	239	248	244	...	1½	373	+ 94
Lanarkshire	2.703	2.751	2.850	2,734	...	3,811	3,463	3,659	3,978	...	21	68.582	+ 16.839
Lancashire United	2.070	2.199	2.186	2.111	...	3.013	2.882	2.760	4.327	...	21	55.962	+ 17.189
Leeds City	10,527	10,606	10.484	10.831	...	11.357	11.454	11.566	15.168	...	8	94.080	+ 14.386
Leicester Corporation ...	3,485	3,523	3.575	3.815	...	4,389	4,480	4,668	5.775	...	—	—	—
Leyton U.D. Council	1,842	1,863	2.318	1.866	...	1.901	2,032	2.097	2.625	...	8	16,203	+ 1.577
Liverpool Corporation ...	15.658	15.388	15.708	15.746	...	17.992	18.422	18.338	21,233	...	20½	355.895	+ 57.290
Llandudno and Colwyn Bay ...	250	249	254	277	...	338	333	366	628	...	25	7,305	+ 2,109
London County Council ...	52.885	53,626	61.315	55.036	...	57,168	58.565	59,968	72.085	...	7½	439.801	+ 47.575
Maidstone Corporation ...	222	207	213	213	...	242	268	251	339	...	7½	2.209	+ 483
Manchester Corporation ...	20.285	20.360	20,429	23.553	...	24,844	25,382	25,248	30,144	...	8	198.632	+ 42.665
Newcastle-on-Tyne Corporation	7.451	7.394	7.671	7.789	...	8.734	8,865	9.211	10,338	...	8	70.949	+ 14,439
New St. Helens and District	1.144	1.232	1.185	1.199	...	1.636	1,547	1.549	2.711	...	47	67.309	+ 16.634
Northampton Corporation ...	770	743	823	776	...	900	816	886	1,138	...	8	7.141	+ 1.282
Nottingham Corporation ...	3.986	4.066	4,238	4.205	...	5,618	5,693	5,776	7,471	...	8	43.299	+ 12.562
Oldham Corporation ...	2.717	2.778	2.615	2.814	...	3,419	3.428	3.739	4,363	...	9	30.472	+ 6.564
Reading Corporation ...	965	949	986	991	...	1.187	1.234	1.245	1.552	...	8	9,452	—
Rhondda Tramways ...	1,466	1.485	1.495	...	...	1.720	1.763	1.688	...	...	20	32,080	+ 5,512
Rotherham Corporation ...	1.703	1,680	1.666	2.017	...	2,020	2.043	2.411	2,257	...	8½	18.040	+ 3.352
Sheffield Corporation ...	11,711	11,696	11.292	11.896	...	13.279	13,568	13,806	14,952	...	8½	119,339	+ 18.767
Southampton Corporation ...	1.777	1.804	1.855	1.790	...	2,397	2.493	2.446	2.978	...	7½	18.554	+ 5.301
Southend-on-Sea Corporation	784	761	826	...	...	730	852	873	...	...	7	4.984	- 2
South Shields Corporation ...	862	845	879	...	...	1,015	1,058	1.116	...	...	7	7,359	+ 1,558
Sunderland Corporation ...	1.672	1,630	1.707	1.819	...	2,034	2.093	2.021	2.494	...	8	16.911	- 3.584
Sunderland District	685	669	...	...	...	954	870	...	...	...	27	23,094	+ 6,045
Swindon Corporation ...	255	262	276	268	...	321	324	280	350	...	7½	2.264	+ 459
Torquay Tramways	568	557	576	...	...	810	780	751	...	...	20	14,047	+ 4,450
Tyneside Tramways and Tramroads	761	766	789	819	...	994	905	1,006	1,781	...	21	18.910	+ 5.355
Wallasey Corporation	1.435	1.366	1.370	1.448	...	1,695	1,744	1.721	2.380	...	7½	13.823	+ 3.072
Walsall Corporation	791	885	892	926	...	1.181	1.194	1.206	1.680	...	8	9,832	+ 2.718
Walthamstow U.D. Council ...	1.236	1.237	1,352	1.263	...	1.308	1,405	1.506	2.055	...	8	11.104	+ 2.044
Warrington Corporation ...	495	501	512	...	...	741	763	712	...	...	7	4.792	+ 1.564
West Ham Corporation	3.597	3.635	4.511	3.709	...	4.009	4,150	4.235	5,122	...	7½	31.396	+ 3.700
Wigan Corporation	1.807	1.853	1.862	1.994	...	2.319	2.286	2.371	3.253	...	8	18 863	+ 4.937
Yorkshire (West Riding)	2.124	2.128	1.902	...	...	2.546	2.565	3.007	...	...	20	48,863	+ 11,359

*** During the war the issue of traffic returns has been suspended by a number of undertakings.

Colonial and Foreign Tramway Traffic Returns.

NAME OF COMPANY.	1917. WEEKS ENDED. May 5.	May 12.	May 19.	May 26.		1918. WEEKS ENDED. May 4.	May 11.	May 18.	May 25.		AGGREGATE. Wks.	1918.	Increase or Decrease.
	£	£	£	£	£	£	£	£	£	£		£	£
Anglo-Argentine	55.638	53,048	52,654	51.429	...	59.028	56.634	54.104	54.989	...	21	1.162.429	+ 81.605
Calcutta ... ... Rs.	67,436	67.244	65.431	64.830	...	76.018	74.568	72.691	70.877	...	21	1.498.321	+101.334
Madras ... ... Rs.	33,945	(2 weeks)	34.285	(2 weeks)	...	42.911	(2 weeks)	42.003	(2 weeks)	...	19	362.727	+ 52.350
Pernambuco	3,612	3.878	3,580	3,589	...	4.442	4.302	4.322	4,300	...	21	95,691	+ 20,196

Companies issuing Monthly Statements only.

	1916. Dec.	1917. Jan.	Feb.	March.	April.	May.	1917. Dec.	1918. Jan.	Feb.	March.	April.	May.	Wks.	AGGREGATE. 1917-18.	+ or —.
	£	£	£	£	£	£	£	£	£	£	£	£		£	£
Ballarat & Bendigo ..	3,981	3.521	3,196	...	...	...	4,127	3.771	3.902	...	...	...	48	40.644	+ 1.316
Brazilian Traction Mlrs	7312000	7266000	6872000	7549000	...	...	8069000	7837000	7315000	8094000	...	...	13	23246000	+1.559.000
Brisbane	32,910	33,020	29,800	33.340	31.620	...	35.019	34.500	32.009	35.530	35,530	...	17	137.569	+ 9.789
British Columbia $	496,959	493,315	451.679	456.626	447,429	...	555.555	559.569	501.150	510.892	515.417	...	43	5.010.688	+ 496.254
Buenos Ayres Lacroze	40.106	38,142	35,977	41,337	39,111	...	40.901	38.902	34.398	42.647	41.643	...	43	388.064	+ 2.601
Burma	32,551	23.802	22,912	27,132	23.660	...	26.224	25.429	22.985	27.906	27.614	...	39	239.756	+ 4,945
Cape Town	...	18,440	...	17.688	...	...	19.803	19.707	...	19.911	...	...	—	—	—
Carthagena & Herrerias	2,399	3,982	3,223	2.955	4,366	4.321	4.424	4.011	4.031	5.316	4,200	5,027	22	22.585	+ 3,738
Cordoba	12,327	12.432	11.896	...	...	...	13.406	12.845	12.972	...	...	...	47	147.938	+ 435
East India	2,120	1,836	1.570	1.647	1,445	...	1.099	1.176	1,318	1,729	1,791	...	39	12.287	— 5.398
Kalgoorlie	2,894	2,431	...	...	...	...	3.044	2,522	...	...	...	...	52	32.608	+ 1.176
La Plata...	4,437	4,315	4.092	4.528	4.230	4,127	4.606	4.711	4.745	5.347	5.169	5,105	21	25.078	+ 3.786
Lima	37,171	36.841	34.228	37.586	37,834	...	41.697	43,536	41.913	42.106	43,557	...	17	171,112	+ 24.623
Manaos ... ... Rs.	158,110	146.493	144.532	...	...	...	150.091	151.871	133,591	...	...	...	8	285,462	+ 5.563
Mexico ... ... $	...	...	...	...	...	...	...	...	...	...	...	...	—	—	—
Monte Video	31.364	33.341	32.304	31.979	29.230	28,716	34.025	36.016	34.573	36.659	33,704	32,301	26	238.338	+ 23.000
Peruvian... ... $	990,842	935.130	844.770	1017000	957,500	902,780	1101090	1189350	925.410	1119530	1079880	1022120	48	11.424,560	+1.261.888
Port Elizabeth	...	4.498	...	4.428	...	...	4.920	4.779	...	4.425	...	...	—	—	—
Rangoon	4.904	4.633	4.605	6.226	5.036	...	5.438	5.361	5.662	5.955	5.885	...	17	22.863	+ 2.363
Toronto ... ... $	...	1002469	932.567	991.192	970.367	...	...	1068319	981.933	1113472	1065766	...	17	4.229.490	+ 332.895
Winnipeg ... $	...	319,945	280,717	293,094	265,594	...	...	334,642	298.899	307,289	296,433	...	17	1,237.263	+ 77,913

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EFFICIENCY

in a motor vehicle is limited to the efficiency of

The Engine

No matter how perfect the other components may be the efficiency of the Vehicle as a whole is singly vested

Daimler

The Daimler Co. Ltd.

Coventry

THE DAIMLER SLEEVE-VALVE ENGINE produces power in abundance. It will maintain a continuity of service which is unapproached by any other engine. The sliding sleeve-valves have eliminated the troublesome springs and tappets, giving a permanent valve setting which is mathematically correct and unvarying for every cylinder.

The absence of any pockets and projecting parts in the combustion chamber avoids all pre-ignition risks, and gives a very high fuel efficiency. The engine is, as a whole, considerably simpler, neater in exterior appearance and lighter than the ordinary type, and ALL WORKING PARTS ARE ENCLOSED AND THOROUGHLY LUBRICATED.

If you have once driven a Daimler you will appreciate its qualities; if not, write for the book "Actual Experience." Sent post free.

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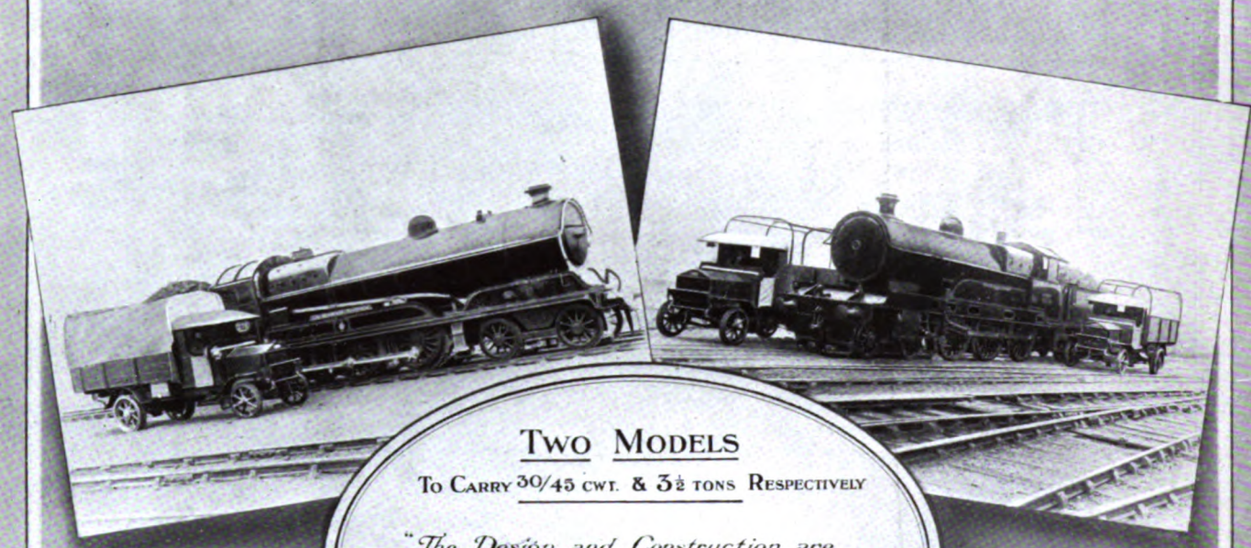
NAPIER

MOTOR VEHICLES.



TWO MODELS

To Carry 30/45 cwt. & 3½ tons Respectively

"The Design and Construction are Throughout of a Character, which it would be Exceedingly Difficult, if not Impossible, to Improve Upon."

RAILWAY GAZETTE, March 31, 1916.

IN PEACE

USED BY THE LARGEST CARRYING COMPANIES AND COMMERCIAL HOUSES.

IN WAR

USED BY THE BRITISH AND ALLIED GOVERNMENTS.

D·NAPIER & SON LTD

WORKS ACTON, LONDON. W

14, NEW BURLINGTON ST. LONDON. W.

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An important move is indicated by a letter recently issued over the signature of Mr. H. C. B. Underdown, as chairman of the Motor Industry Branch Committee of the Engineering Trades (New Industries) Committee. From this letter it is clear that the Government are awake to the supreme importance of enabling manufacturers to make preparations for their post-war production. In the case of the motor industry, such preparations are peculiarly necessary, since the industry is still in a stage at which development is fairly rapid. No manufacturer could expect to do much post-war business with a car designed or produced before the war. The new models must differ from the old in many respects, and if the points of difference are not thoroughly tested before manufacture in quantity is attempted, the industry will run a great risk of damaging its reputation by turning out products faulty in certain particulars. This matter comes particularly within the sphere of the Engineering Trades Committee. The committee, though constituted primarily to encourage the development of new industries, evidently do not draw the line at new designs produced by established industries. Such a line would, in fact, be almost impossible to draw, since the new model and the new product only differ from one another in degree. Manufacturers are now invited to send to the committee particulars as to the materials and facilities required by them for the manufacture and testing of experimental vehicles of post-war type. There is, of course, no guarantee that the facilities and materials will be granted. This is a matter in which the Priority Branch will doubtless have the last word. All that can be said at present is that the Engineering Trades Committee are the channel through which all demands of this kind have to be put forward, and that the committee are anxious to do their best to secure for motor manufacturers those supplies without which post-war plans would have to remain on paper until the war has actually ended.

* * * * * *

As to the necessity for new post-war models there can be no question. The industry has, perhaps, passed the time when every firm considered it necessary as a matter of course to present new models every year. So far as the commercial vehicle is concerned, this is a practice which must be deprecated as leading to waste of energy and to the production of an unnecessary number of types. Under present circumstances, however, the trade had been so long catering for an abnormal type of demand that the whole position needs to be thoroughly reviewed, and tests conducted upon a number of features suggested by past experience, but unable to be incorporated in war models. The motor vehicle will always be subject to more changes in design than most classes of machinery because the conditions of its use change, and it must necessarily be modified to meet the new conditions. Moreover, its fuel is of a kind that cannot be regarded as standard. What we call petrol to-day would not have been allowed to bear that name a few years ago, and the motor fuel of the near future may probably contain only a small percentage of what is now called petrol. Thus, with changing conditions of use and changing qualities of fuel, it must continue to be necessary to modify the vehicles from time to time; most certainly it is necessary after the long interval that has elapsed since manufacturers were able to focus their attention on civilian requirements. Moreover, at this interval there are not the usual facilities for watching and learning by the experience and gradual developments of competitors. The differences between the post-war and the pre-war model must consequently be far more fundamental than are the differences between the models of one year and of the next, and therefore will require to be particularly thoroughly examined and tested before incorporation into a standardised product.

The Board of Trade have taken very estensive powers in the interests of the Road Transport Control Board. We do not know as yet how far these powers will have to be applied, and it is to be hoped there will be no necessity to use them to the full. Should this be done, it must apparently have the result of transferring to the railway a considerable proportion of the goods traffic that it has been found more economical or more convenient to carry by road. Particularly there is a chance of the imposition of arbitrary restrictions in the radius of action of motor vehicles. This would, of course, be only temporary, and should be abandoned as promptly as possible, as it is extremely retrograde in principle. In the interests of efficiency it is essential that each form of transport should settle down naturally into its own place, and compete with other forms upon the natural border lines which divide them. To limit the radius of action of one method is almost tantamount to giving another method the monopoly beyond that radius, and such monopolies are generally sooner or later abused. When the whole matter is a question of restricting competition between the railways and road vehicles, it is particularly unfortunate. We

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MOTOR TRAFFIC.

notice that among the powers taken is the prohibition of the carriage of certain classes of goods by road and regulation of the priority of other classes. Attention has lately been called to the fact that advertisements are still appearing offering pianofortes and furniture to be delivered free at any railway station in the United Kingdom. If it is possible still to give such facilities on the railways, there is apparently no excuse for inconveniencing passengers by restricting services. Neither is there any very evident excuse for limiting or prohibiting the carriage of similar or other goods by road. The exercise of the full powers over road vehicles could be made tantamount to a prohibition against moving bulky luxuries at all. For instance, if pianofortes could not be carted to the railways, they could not be delivered to distant customers. Any regulations that may be enforced will presumably be made to apply to all vehicles made or used by the railways themselves. If not, the rules are bound to be ineffective so long as the railways continue to carry luxury articles. The greatest care will have to be taken in every direction to make sure that regulations of this kind are not so applied as merely to interfere with the natural competition between various systems of transport without effecting the main object of giving preference to the carriage of essential goods.

The notes published in our issue of May 16 were written just before publication of the report of the Gas Traction Committee, which we reproduced at length. The most interesting part of that report is to be found in the short section dealing with semi-rigid containers, and the statements contained therein have given rise to a good deal of controversy. The committee classed in this category containers of rubber and canvas or other proofed fabric, whether armoured with steel wire or not. The opinion was expressed in the report that such containers should not be charged to a greater pressure than 90 lb. to the square inch, and should be limited to an internal diameter not exceeding four inches. Even so, it was maintained that they should be armoured with galvanised steel wire. It was certainly suggested that encouragement should be given to the construction of improved containers of the semi-rigid type to work up to pressures of 300 lb. per square inch. This, however, is only about 20 atmospheres, so that to carry any considerable quantity of gas the containers mentioned, especially if of small diameter, would have to be of very unmanageable dimensions, and would have no chance against metal cylinders carrying gas at 120 atmospheres pressure. Unfortunately the committee made no statement that throws any light upon their reasons for suggesting such strict limitations of the use of semi-rigid containers. Meanwhile the recommendations are entirely opposed to the confident statements of certain firms that have been making containers based upon rubber, and it would certainly seem that in throwing cold water upon the theories of such firms, and ignoring the results of experiments which are stated to have been made, the committee should not have confined itself to bald conclusions, but should have introduced some argument or detailed evidence. However, the present report is only of an interim character, and it is perhaps intended to rectify the omission at an early date, following upon the conduct of experiments which the committee desire power to make.

The report of Lord Balfour of Burleigh's Committee contains a number of statements which may have an important bearing upon the future of the motor industry. That industry is definitely recognised as being essential to national prosperity, and is referred to as having suffered in the past from ill-advised legislation, whereas certain other industries are indicated as owing their troubles mainly to their own faults in organisation. This being so, it is evidently contemplated that the motor industry is one of those in connection with which the need for establishing a tariff will at least be seriously considered. The proposal is to set up a strong Board, which shall examine into all such cases, bearing in mind always the interests of the user as well as of the manufacturer. It is to be hoped that if anything of this kind is to be done, the matter will be taken in hand promptly. The benefit which this or any other industry would derive from a tariff is largely dependent on the possession of early knowledge as to whether it can depend on this form of protection, and, if so, to what extent. A manufacturer who realises that he is to some degree handicapped as against foreign competitors cannot form a fair conclusion as to whether he can face that handicap and enter into direct competition unless he knows the extent of the assistance that will be available to him if he does so. Manufacturers are anxious to get all their plans for after-war production completed, and if it is only when they have done this that they are to be told whether or no the tariff will be imposed, it stands to reason that they will have to take the safer course and depend for their future markets upon the special qualities of their product rather than upon the quantity production of a vehicle designed to compete with the cheap foreign machines.

ROAD TRANSPORT BOARD.

STEPS TO SECURE ECONOMY AND TO MEET NATIONAL EMERGENCIES.

The Road Transport Board, which was recently inaugurated as a department of the Board of Trade, has made considerable progress with the organisation of the Divisional Boards and the Area Committees. The chief duty of an Area Committee is to arrange as early as possible economies in transport by the co-operation of traders and the general co-ordination of trades, with a view to the prevention of unnecessary overlapping and duplication of traffic.

The Area Committees have also been instructed to take steps to arrange for the provision of a sufficient number of vehicles (excluding railway and agricultural conveyances) for the conveyance of food and other supplies and material from one part of the country to another with the least possible delay in the event of a serious national emergency, such as an invasion by the enemy. It is proposed to have in readiness a register of all steam, petrol, electric, and gas driven vehicles—not at present including private motor cars—together with all four-wheeled horse-drawn conveyances with a load capacity exceeding 15 cwt. Every conveyance registered will continue to be available for business purposes under a special permit, subject to the liability of the owner, when called upon, to put his vehicles and drivers at the disposal of the Road Transport Board.

After a recent meeting of the Road Transport Board an official is reported to have stated that van power would be controlled on lines similar to those controlling man power. "Roughly speaking, the trades that will have to supply men to the army will not be able to transport their goods by road," said the official. "We shall give first consideration to perishable foodstuffs. Our scheme aims at enforcing every conceivable economy on the road, and at putting every vehicle to the best possible use. It should be in full swing before the end of June."

At the request of the Divisional Food Commissioner of the North-Western Area, the Lancashire branch of the Commercial Motor Users' Association has gathered together a fleet of 60 wagons for the purpose of assisting to cope with the congestion of foodstuffs arriving at Manchester and Liverpool docks. The prevention of waste and a more even distribution of the foodstuffs is thus assured.

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MOTOR TRAFFIC.

PNEUMATICS FOR HEAVY LORRIES.

The Goodyear Tire and Rubber Company, Akron, Ohio, have published their experience of running seven heavy-capacity trucks fitted with giant pneumatic tires over roads which were cleared of snow during the past winter. In setting out the results the *Commercial Vehicle*, of New York, points out that the engine of the ordinary 5-ton truck is not sufficiently large to permit of the greater speeds made possible by the use of pneumatic tires. While the six Goodyear trucks, which are equipped with their ordinary engines, have averaged 10 miles an hour, running time, for the entire 740-mile route between Akron and Goodyear, Conn., the 3-ton Packard, equipped with a 5-ton engine and 44 by 10 in. pneumatic tires, has averaged 14·9 miles an hour, actual running time. The total time on which this speed was maintained was 77 hours, or an average speed of 9·6 miles an hour, and reduces by 11 hours the schedule established for the journey.

On the 3-tonner equipped with the 5-ton engine the petrol consumption was 5 miles to the gallon over a period of three complete trips to Detroit and two to Boston, giving a total mileage of 4,442. The ordinary 5-ton Whites and Packards used in the service averaged 3½ miles to the gallon. The 3-ton White has averaged four miles to the gallon, and the 3½-ton Mack three miles to the gallon.

In oil consumption the 3-ton truck with the 5-ton engine is also considerably ahead of the other trucks, averaging about 110 miles to the gallon, whereas all of the other trucks have so far averaged only 50 miles to the gallon. This low lubricating oil record is partially explained by the fact that the engines are running at higher than their rated speeds, and in addition are sometimes run without a single stop for six continuous days. The engines on the 5-ton standard Packard and the 3-tonner with the 5-ton engine are rated to run at 1,000 revolutions per minute, but in the Goodyear trucks are run at 1,500 revolutions per minute. The trucks have to cross the Allegheny Mountains where the grades are as high as 18 per cent. for a climb of 100 ft. on the west side of Ligonier Mountain.

The operation of the 3-ton Packard with the 5-ton engine promises to result in advancement in chassis design by reducing the chassis weight on account of the use of pneumatic tires. The 3-ton Packard with 5-ton engine and carrying a 5-ton load already weighs 4,000 lb. less than the standard 5-ton Packard with a 10,000-lb. load. The 5-ton Packard loaded with 10,000 lb. weighs 23,000 lb., including a 3,500-lb. body. This vehicle, the pioneer of the Goodyear fleet, had to date travelled 30,000 miles, having completed 19 round trips. The truck weighs 4,000 lbs. less than the standard 5-tonner.

The 3-tonner with a 5-ton engine and a body of the same weight weighs only 19,000 lb., thus showing a saving of 4,000 lb. While the present body on the 3-tonner with a 5-ton engine weighs 3,500 lb., the next body of the same type to be used will weigh only 2,500 lb., and it is expected that 800 lb. can be saved on the chassis on account of the use of pneumatic tires.

Since the large pneumatic tires absorb road shocks to a large degree, and prevent the continuous pounding as experienced with solid tires, on heavy trucks travelling at high speeds, trucks using them will undoubtedly be permitted on the roads on which heavy solid-tired vehicles are now prohibited. One such road is the Grand Concourse in New York City.

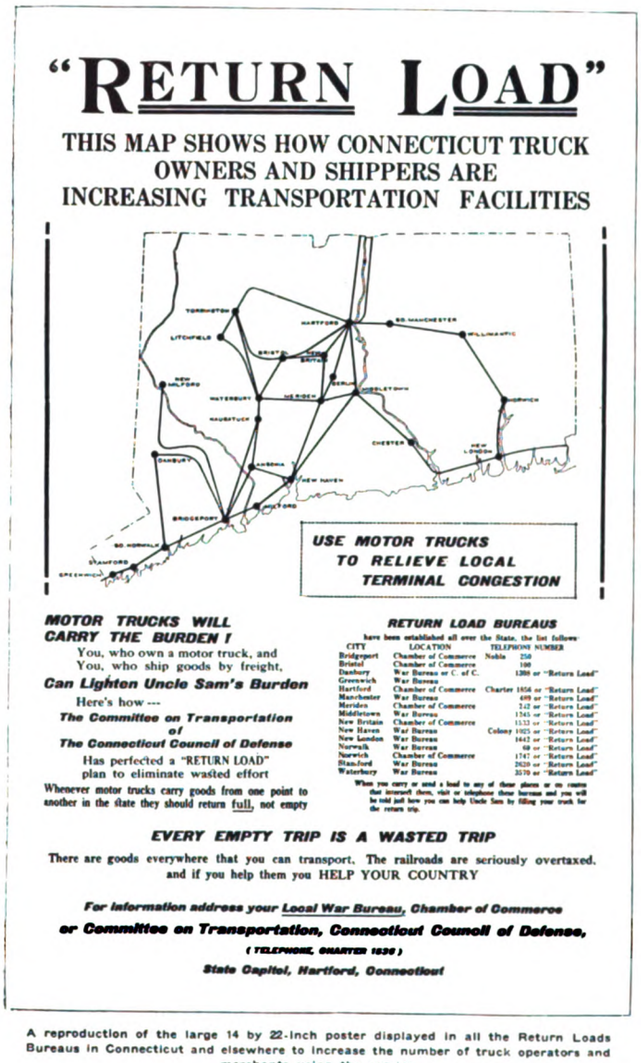
NEW "KARRIER" PUBLICATION.

The latest "Karrier Cars for Commerce" publication issued by Messrs. Clayton and Company, of Huddersfield, is both a compact and an artistic production. As is fitting at a time when the products of the Karrier works are taken for military, naval, and other national service, the chassis described and illustrated in the folder is the industrial and public service machine which has given such satisfaction during the war. It is the 3-4½-ton vehicle of 50 H.P. with live axle, and it is strikingly illustrated on the first page by a photograph of a Karrier climbing a 1 in 3½ gradient. The four-cylinder engine of this chassis is the largest engine fitted for the British War Office specification. By the issue of the particulars in the form of a folder the reader has all the illustrations of the complete chassis and its parts, together with a lengthy technical description, placed immediately before him, without the need of turning over pages to find the various items. The war service of the Karrier under the most exacting conditions has abundantly substantiated the firm's claim of "quality, strength, and efficiency" for their vehicles, and the high favour in which the machines are held is shown by the constant receipt of repeat orders. Many users have also remarked upon the insignificant smallness of its repair bill, even after many years' long and useful service. Copies of the folder may be obtained from the Karrier Works, Huddersfield.

RETURN LOADS IN AMERICA.

COMBINED WAR MOVEMENT FOR ECONOMY IN TRANSPORT AND GOOD ROADS.

Although the Council of National Defence in the United States have given an energetic lead to movements for concentrating national effort upon the war, various States have not waited for Government exhortations to activity. An example is afforded by the State of Connecticut having led the whole country in the formation of a Return Loads Bureau for motor vehicles. This was organised in February. It was not until the middle of March that the Council of National Defence at Washington issued a statement that they approve of the widest possible use of the motor truck, and requested the State Councils of Defence and other State authori-


"RETURN LOAD"
THIS MAP SHOWS HOW CONNECTICUT TRUCK OWNERS AND SHIPPERS ARE INCREASING TRANSPORTATION FACILITIES
USE MOTOR TRUCKS TO RELIEVE LOCAL TERMINAL CONGESTION
MOTOR TRUCKS WILL CARRY THE BURDEN!
You, who own a motor truck, and
You, who ship goods by freight,
Can Lighten Uncle Sam's Burden
Here's how ---
The Committee on Transportation of The Connecticut Council of Defense
Has perfected a "RETURN LOAD" plan to eliminate wasted effort
Whenever motor trucks carry goods from one point to another in the State they should return full, not empty
RETURN LOAD BUREAUS
have been established all over the State, the list follows:
CITY LOCATION TELEPHONE NUMBER
Bridgeport Chamber of Commerce Noble 250
Bristol Chamber of Commerce 100
Danbury War Bureau or C. of C. 1200 or "Return Load"
Greenwich War Bureau
Hartford Chamber of Commerce Charter 1056 or "Return Load"
Manchester War Bureau 400 or "Return Load"
Meriden Chamber of Commerce 342 or "Return Load"
Middletown War Bureau 1345 or "Return Load"
New Britain Chamber of Commerce 1132 or "Return Load"
New Haven War Bureau Colony 1925 or "Return Load"
New London War Bureau 1442 or "Return Load"
Norwalk War Bureau 68 or "Return Load"
Norwich Chamber of Commerce 1147 or "Return Load"
Stamford War Bureau 2820 or "Return Load"
Waterbury War Bureau 2570 or "Return Load"
When you carry or send a load to any of these places or on routes that intersect them, visit or telephone these bureaus and you will be told just how you can help Uncle Sam by filling your truck for the return trip.
EVERY EMPTY TRIP IS A WASTED TRIP
There are goods everywhere that you can transport. The railroads are seriously overtaxed, and if you help them you HELP YOUR COUNTRY
For information address your Local War Bureau, Chamber of Commerce or Committee on Transportation, Connecticut Council of Defense,
(TELEPHONE, CHARTER 1030)
State Capitol, Hartford, Connecticut

A reproduction of the large 14 by 22-inch poster displayed in all the Return Loads Bureaus in Connecticut and elsewhere to increase the number of truck operators and merchants using the service

ties to facilitate that means of transportation and to remove any regulations that tend to restrict and discourage such use.

Two causes that have operated towards the formation of Return Load Bureaux are the congestion on the railways and the movement for keeping the roads free from snow and for improving the main routes between the principal cities.

The main function of the Connecticut Return Loads Bureaux has been to get the shippers and the transportation proprietors together. Unlike the bureaux formed in Great Britain, they have not fixed the rates to be charged. They have left this matter to the parties themselves, together with such questions as the reliability of the haulage firms and their responsibility if goods are lost or damaged. It was not thought necessary for the bureaux to set up fixed rates or assume any responsibility in the transaction. Both of these questions will undoubtedly be solved by the Interstate Commerce Commission during the coming year.

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MOTOR TRAFFIC.

On this and the previous page we reproduce (1) the large poster issued by the Connecticut State Defence Council's Committee on Motor Transportation, presided over by Mr. M. S. Conning; and (2) the post-cards sent out to motor owners in order to gain information for haulage work in that State. Under the direction of this committee a Return Loads Bureau has been formed in each of fourteen cities, where there are a large number of firms producing war material. More than 700 trucks of 1-ton capacity and over are listed in the bureaux, over 49 routes. All of the trucks running over any one of these routes are filed with the number of the route, so that the vehicles available for service between any two given cities are kept in one group.

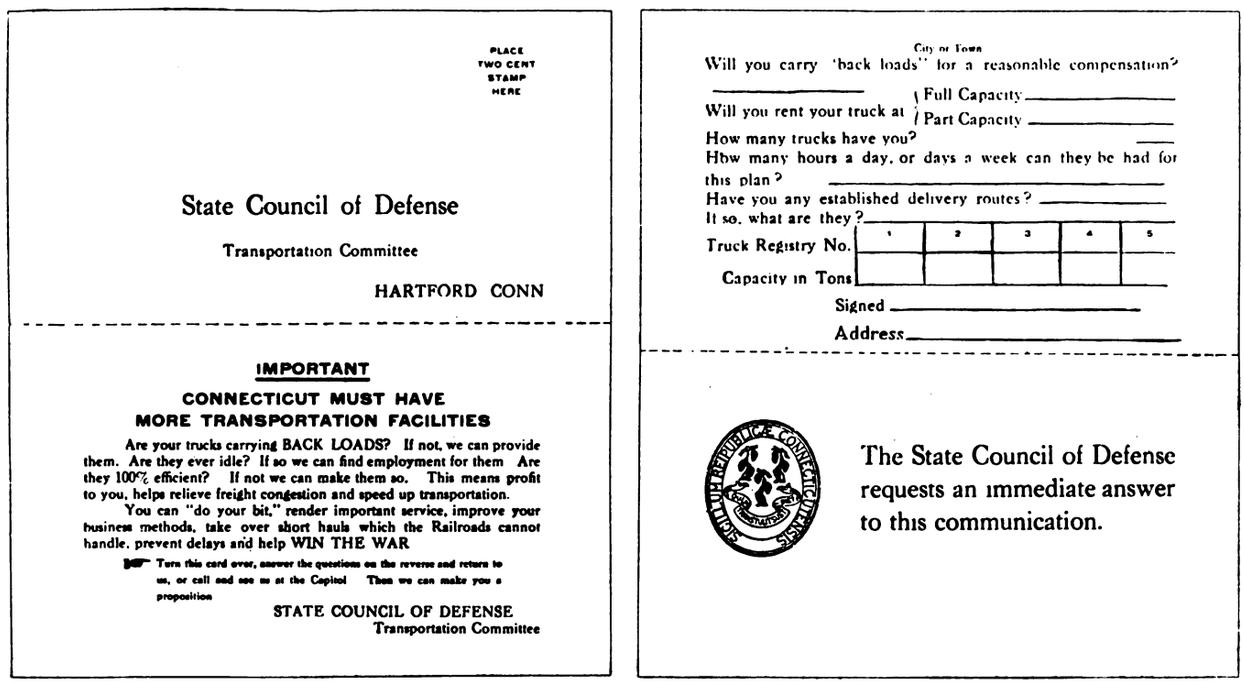
The information obtained from the post-cards has been entered on index cards, 3 by 5, and filed in a small filing cabinet. The trucks available for work on any particular route are filed behind a blank card having a marker designating the number of that particular route. The master file has been duplicated and furnished to the local Return Loads Bureau formed in each city, together with a map showing the location of the bureau and of the numbered routes. By this means the head of the bureau in each city knows what trucks are available for any of the other towns.

from the obligation to clear their tracks without obstructing the rest of the highway. It is stated that the money thus spent by Connecticut will be repaid several fold by the better conditions of the roads in the spring. In past years the ruts in the snow have permitted the driving chains on motor trucks to sink down and wear ruts in the road as soon as the snow began to melt, so that many miles had to be resurfaced after the snow had disappeared.

The State of New Jersey has established bureaux in six cities, and eventually it is hoped to extend them to 35 other towns with populations of 10,000 and over.

Similar steps are in progress by the Defence Council of the State of Ohio, with the aid of the Chambers of Commerce. The inter-urban electric railway companies in this State have expressed some opposition on the grounds that they can handle additional freight if they are allowed to borrow money to purchase new cars. The reply given is that if Connecticut's experience is to be taken as example, there seems to be sufficient tonnage to be moved by both electric railways and motor trucks.

In April the Merchants' Association of New York, which has long dealt with its members' railway and shipping problems and all questions relating to the removal of goods, took steps to inaugurate


PLACE TWO CENT STAMP HERE

State Council of Defense

Transportation Committee

HARTFORD CONN

IMPORTANT

CONNECTICUT MUST HAVE MORE TRANSPORTATION FACILITIES

Are your trucks carrying BACK LOADS? If not, we can provide them. Are they ever idle? If so we can find employment for them Are they 100% efficient? If not we can make them so. This means profit to you, helps relieve freight congestion and speed up transportation.

You can "do your bit," render important service, improve your business methods, take over short hauls which the Railroads cannot handle, prevent delays and help WIN THE WAR

☞ Turn this card over, answer the questions on the reverse and return to us, or call and see us at the Capitol Then we can make you a proposition

STATE COUNCIL OF DEFENSE
Transportation Committee

City or Town

Will you carry "back loads" for a reasonable compensation?

Will you rent your truck at { Full Capacity / Part Capacity

How many trucks have you?

How many hours a day, or days a week can they be had for this plan?

Have you any established delivery routes?

If so, what are they?

Truck Registry No.	1	2	3	4	5
Capacity in Tons					

Signed

Address

The State Council of Defense requests an immediate answer to this communication.

Return Post Cards Sent Out by Connecticut Return Loads Bureau.

Each bureau has circulated the data by means of letters to all of the large shippers and manufacturing plants in its own locality. The shippers and manufacturers were also requested to give information concerning their overland haulage needs, so that the data might be included on cards similar to those on which the truck data are kept and inserted in the front part of the filing cabinets. Thus, when a shipper calls up a bureau and asks for the names of truck owners to haul goods between any two cities, the file clerk determines the number of the route and gives the shipper the names of the truck owners operating vehicles thereon. Reversely, the names of shippers or manufacturers in any city may be had by scanning the cards in the front of the file.

To make it easier for either shipper or truck operator to get in touch with the bureau, the Connecticut organisation has arranged to have the telephone number of the Chamber of Commerce listed a second time in the book under the heading "Return Loads." This makes it convenient for a truck driver to reach any particular bureau and find out the names of firms who might have a return load to go to his own city.

More than a year ago Connecticut realised the importance of snow clearance by passing a law under which the Highway Commissioner is to cause any town or municipality to remove accumulations of snow at the expense of the State. Up to February last he had spent a large sum for the removal of snow from 1,000 miles of road. The Act does not relieve street railway companies

a Return Loads Bureau. Several others have since been formed there. Working through the Chambers of Commerce, the Highway Transport Committee formed at Washington are planning a return loads system to relieve congestion east of the Mississippi River. The plan is to first establish return loads through Boston, Mass., to Washington, then New York to Buffalo, N.Y., and next Philadelphia, Pa., to Chicago, taking in Cleveland, Ohio, Detroit, Indianapolis, Ind., and Cincinnati, Ohio. Later it is planned to include the smaller towns. Up to May 13, 34 bureaux had been started in six States.

The National Automobile Chamber of Commerce has sent a circular to all motor manufacturers urging them to co-operate and assist in increasing the number of Return Loads Bureaux.

U.S.A. ROAD BUILDING IN FRANCE.

It is estimated that 1,200 miles of waterbound macadam and tar-surfaced highways will be built by American road engineers in the rear of the firing line in France during the present year. A fleet of Mack trucks is to be used in this work composed of dump trucks, hot road oilers, pressure sprinklers for making macadam, petrol tank-trucks, machine shop trucks, blacksmith and tool repairing trucks, and others fitted for the preparation of plans, etc.

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MOTOR TRAFFIC.

MOTOR COMPANIES' MEETINGS.

NEW STRAKER-SQUIRE VEHICLE—FACTORY TO BE EXTENDED.

Mr. Sidney Straker, the managing director, presided at the fourth annual meeting of Straker-Squire, Limited, which was held on May 10 at Cannon Street Hotel. In proposing the adoption of the report and accounts, the chairman said that the period under review —namely, October 4, 1915, to December 31, 1917—had not been free from anxiety, but on the whole the results might be considered as satisfactory. The profit shown of £28,685 was net profit, after meeting all claims for excess profits. Of this sum the shareholders had received dividends amounting to £21,119, and it was now proposed to pay a balance dividend at the rate of 10 per cent. per annum for the year ended December 31, 1917, amounting to £8,750, which would leave a carry forward of £3,880. Considering that they had met all claims for excess profits, and had not yet been able to take full advantage of the additional capital subscribed last year, the result was one which should afford gratification to all concerned.

An arrangement was made with the Government in September, 1916, by which the company's factory was taken over at a rental of £27,500 per annum, and in addition they were to have a sum for compensation for disturbance, payable when the factory was handed over to the company again. They would probably receive fair treatment, and if they did he hoped that the period which must elapse between the time of their resuming possession and getting these works, with supplementary works, into full working order, would be such that the company's future prospects ought not to be jeopardised. In the meantime a considerable part of the new capital had been expended in laying down further machinery, and generally extending the manufacturing facilities of the company. Those works were fully employed, and the trading profit was satisfactory. Besides other urgent Government work, they were engaged upon spare parts for vehicles which they had manufactured in the past.

The board were considering the best means of meeting future competition, and placing the company in a position to manufacture at the earliest opportunity. Their latest commercial model had proved so attractive that orders had been placed by many of the most important agents in the kingdom, and deposits had been paid on orders amounting to £150,000. Until they were further forward in their arrangements for manufacture they did not consider it advisable to accept further orders. It was the intention of the directors last year to acquire a further site and build a factory suitable for extensions, but they had decided to defer that programme until better facilities were afforded.

The resolution was unanimously adopted.

THOMAS TILLING, LIMITED.

At the 21st annual meeting of Thomas Tilling, Limited, Mr. R. S. Tilling, who presided, said that nearly every section of the business was being used for work of national importance, and a large portion of it had been declared a controlled establishment. They believed that there was an enormous future for the transportation of goods from the place of production to the people who had to be fed. One of their directors, Mr. Walter Wolsey, jun., had been appointed on the Advisory Committee of the Road Transport Board. During the past year the business had been conducted under great difficulties, whether on the mechanical, the horse, or the manufacturing side. Their industry played an important part in passenger-carrying traffic. There was, however, a very large section of it not so well known which was almost exclusively engaged in the collection and distribution of munitions of war, food, and other necessaries in and around London and some provincial towns.

The report and accounts were adopted declaring a dividend of 15 per cent., less tax, on the ordinary shares for the year ended December 31, 1917, thus entitling the income debenture stockholders to additional interest at 2⅜ per cent. for the year. The balance of £41,766 was carried forward to next year, subject to any liability for excess profits duty.

Mr. R. S. Tilling was re-elected to the Board.

THE ALBION MOTOR CAR COMPANY announce a dividend on ordinary shares of 10 per cent., less income-tax, making 15 per cent. for the year 1917, as against 20 per cent. for the previous year.

LEAD FOR ELECTRIC VEHICLE BATTERIES.—The Controller of the Priority Department of the Ministry of Munitions has consented to an addition to Clause 15 of the special battery permit held by members of the Accumulator Makers' Section of the B.E.A.M.A. The effect of the alteration in the permit will enable battery manufacturers to repair and maintain electric vehicle accumulators without the necessity of special applications for permits for each vehicle.

"COMMER" LORRIES AND FORESTRY.

One of the most important of the auxiliary services in connection with the war is the regular supply of timber as raw material for the various departments under the control of the Ministry of Munitions. Indeed, without a plentiful supply the war must have come to an end. Great quantities are in constant demand, and thanks to excellent organisation, and the reliability of the large number of motor lorries engaged in this work, the full requirements of the factories have for nearly two years been met from home sources. Not only has the supply been maintained at the rate which was apparent before shipping became restricted, but it has been greatly increased. Canadian lumbermen have been prominent in the work of felling and cutting up, while women are doing excellent service in measuring the rough product.

The accompanying illustration shows one of a fleet of "Commer" lorries engaged on hauling logs from a forest to railhead nine miles

Commer Car Lorries Hauling Timber.

distant. The vehicle shown is of 4½ tons, carrying a load of 20 ft. logs, and the men are members of the Canadian Forestry Corps. The lorries belong to Commercial Car Hirers, Limited, Junction Road, Highgate, N., the contractors for the work, who are doing larger contracts of a similar kind in a considerable number of districts. The lorries employed are all 1908-9 models, and each makes six trips a day, the full fleet delivering a steady average of 80 tons of logs per day, after nearly ten years' service. This excellent record is in itself testimony as to the reliability of the "Commer" machines, and must be most gratifying to the manufacturers. The whole operation of felling the trees and loading the sawn logs shown on the fully loaded lorry is a matter of a few minutes only for each gang of eight men.

OMNIBUS QUEUES IN LONDON.

The London General Omnibus Company have decided to institute queues for passengers on an extensive scale in compliance with suggestions made by Borough Councils during the past six months. Before these suggestions were offered the company had adopted queues at Hammersmith and other busy points, with the consent of the local authority and the police. Notwithstanding the shortage of labour available for regulating the queues, the experiments have proved successful, and permission has now been obtained for the institution of queues at 29 points. Inspectors will be present at certain places during the busiest hours of the day to supervise the arrangements. Among the points announced are:—Park Royal, Broadway, Hammersmith, and Kilburn Park (Underground station), where omnibuses start for Watford, etc. It is hoped that the authorities will facilitate the arrangements by following the action of Southwark and other borough councils in allowing the erection of posts and signs as an experiment in Newington Causeway.

U.S.A. TRUCK ORDERS IN ENGLAND.—In addition to the motor vehicles which are being constructed in the United States for the use of the American Army in France, the Government have recently placed a number of orders with British firms. It has been decided by the U.S.A. Government that publicity is to be given to all contracts for trucks which are ordered exclusively by the War Department. The 600,000,000 dollars worth of orders placed through the Automobile Industries Committee is not included in the ruling. Neither are any of the contracts for vehicles for naval bases.

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MOTOR TRAFFIC.

FUTURE OF HEAVY MOTOR TRANSPORT.

In a presidential address delivered at a general meeting of the Commercial Motor Users' Association, held on May 31, for the purpose of congratulating him upon his election as the first president, Colonel E. B. Crompton, C.B., M.Inst.C.E., said :—I feel certain that almost all serious thinkers agree with me that rapid, cheap, and certain transport from port to inland town or village, or from town to town—nay, even from cottage door to factory, or from factory to cottage door—is now an acknowledged necessity and must come. Your industry, to which you have devoted your money, your time, and your energies, must take rank with the great national industries—shipping and railways. The war has shown clearly, even to those who did not previously realise it, how greatly everyone's comfort, convenience, and health have depended on the road transport which you provided for bringing to our doors not only our food, but almost every necessity of life on which our comfort and happiness depend.

The possibilities of a perfected system of collection and distribution of all products, raw and manufactured, are so great that it is unnecessary to say more than that all these schemes and those for re-housing our workers depend principally for success on the cheap road transport means which you, and you only, can give to them. Time spent on this transit is so valuable that speed and frequent service are imperative, and can only be given by you by motor omnibus or chars-a-banc.

Fuel Difficulties.—Electric and Steam Traction.

The supply of liquid fuel on which you have hitherto relied to drive the greater part of your vehicles is so restricted by war conditions that for some time to come you will have to look for other means of obtaining driving power. Thanks very largely to the exertions of Mr. Shrapnell Smith, who succeeds me as chairman, the use of gas as a power agent for traction purposes has been made possible, and is steadily extending. Later on, when war conditions permit of the manufacture and supply of cylinders and compressing plant, the use of the gas-propelled vehicle will be greatly helped, and in my opinion will become permanent, even for all the lighter classes of vehicles, and for short runs, such as for taxis and private carriages within or near towns.

The next available source of power is by electrical means. It is practically certain that further developments of accumulators will take place in the near future, which will increase their usefulness and durability, and at the same time reduce the dead-weight carried. There is another and very hopeful direction in which electrical power may be applied. The trolley system, so long used to take that power from wires at the road-side, is certain to be improved on ; I am sanguine enough to believe that the unsightly and awkward trolley-pole may be suppressed, and that Tesla's ideas of obtaining electrical power by induction from a charged wire at the road-side is capable of solution.

Finally, we come to the use of solid fuel. Owing to the perseverance of men like Foden, Clarkson, and others, we luckily have on the road a great number of steam vehicles which are deservedly favourites with you, and I am glad to tell you that I have recently seen the development of a Clarkson steam-driven three-ton lorry in its latest form. Of this development I, as an English engineer, feel very proud, and I am sure that the Coal Controller will feel with me how much we already owe to Mr. Clarkson for his inventive capacity and for his business-like foresight. His latest development is a marvel of simplicity and good engineering design. A three-ton steam-driven omnibus or van on this system can be driven and attended to by one man as easily as if it was petrol-driven. The fuel is coke, the radius of action is sufficient, and working cost per mile for fuel is just one-third of that of petrol at its present price. This is the beneficial result of the more general distillation of coal to obtain the valuable by-products for making explosives, and which is likely to continue. I am sure that other manufacturers of steam vehicles will be quick to avail themselves of Mr. Clarkson's valuable initiative, and that the Coal Controller's wishes that we should address ourselves to the use of coke fuel will be largely and happily followed.

After-War Conditions

As to future relations between the railway companies and yourselves—the road vehicle owners. It is imperative that these relations should be cordial, for it is evident that your interests are one and the same. You are mutually dependent; rivalries and cuttings of rates must cease, and the railway and road distribution must be considered as a whole, so that close relations between the two industries must be provided for. During the first years after the war, owing to the high price of steel and other materials required for the renewal of permanent way and rolling stock, railways, whether these be heavy or light lines, or tramway companies, will be handicapped. They will not be able to extend their lines, but must confine themselves to putting their existing lines into perfectly efficient order. At this very time, owing to the cessation of hostilities, a great supply of motor vehicles will be returned to you. These will be available for immediate use, and you will have more drivers trained in the army than you will require to work them. As regards the liquid fuel, it is obvious that, so soon as it is no longer required for the manufacture of explosives, benzol could be assigned to you as a propelling fuel.

How much of this distributing system is to be carried out by the railways, and how much by our motor wagons, no one can yet say. But I think all engineers are now admitting that Gattie's idea of a transferable container system, with clearing-houses for transferring the containers from railway wagon to railway wagon, or from them to motor wagon, is a system which must and will be followed if we are to give our country the benefit of transport at the least possible cost. Gattie's container system will, I think, be a most potent means of reducing the total number of railway wagons and motor wagons occupied in moving and distributing any given quantity of goods.

Undeveloped Districts and Road Reconstruction.

It is curious how we seem to have missed the transport advantages that our great network of roads has given. This must be remedied, by improved carriage facilities, so that land, distant from town centres, may become almost as valuable as accommodation land now is in the immediate vicinity of the town. The labour for road reconstruction will be available, and it is for we engineers to see that it is rightly used.

Road reconstruction should, I think, take the form of re-surfacing main roads in two half-widths, each of 10 feet, one-half amply strong enough to carry 8-ton axle-loads driven at six miles an hour on steel tires, or at 12 miles an hour on rubber tires ; the other half only being more lightly and cheaply surfaced to be able to carry axle-loads of two tons and under at higher speeds. By this method, the cost of re-surfacing these roads can be greatly reduced. I estimate that the saving on this reconstruction of 50,000 miles of main and secondary roads would amount to 15 millions sterling—almost three days' cost of the war. This division of the road into two halves would entail traffic regulations to confine the "heavies" to using the strong half, but allowing the light traffic to spread itself and to use the stronger half wherever it is not occupied by heavies.

The meeting was attended by over 200 members and guests. Mr. Shrapnell Smith presided, and the attendance included the Hon. Sir Arthur Stanley, M.P., Sir J. H. A. Macdonald, Sir Dugald Clark, Sir R. Glazebrook (National Physical Laboratory), Sir A. Lawrence, Prof. J. Cadman, Mr. Joynson Hicks, M.P., Mr. H. C. Underdown (President, Association of British Motor and Allied Manufacturers), Mr. Sydney Straker (Society of Motor Manufacturers and Traders), Mr. W. Wolsey, Major-General S. S. Long, and officials of various motor organisations.

MOTOR TRANSPORT YEAR BOOK.

Omnibus Problems Discussed by Mr. S. E. Garcke.

There could be no better testimony to the value of the *Motor Transport Year Book and Directory* than to say that it bids fair to become to the industry as valuable as *Garcke's Manual* has been for many years to all who are interested in electrical undertakings. Volume III. for 1918 has recently been issued by the Electrical Press, Fisher Street, Southampton Row, W.C.1., and notwithstanding the greatly increased costs of production due to the war the price remains at 12s. 6d. Its issue comes perhaps a little later this year, but the delay has its compensations in enabling late events of importance to be included in its pages, notably the formation by the Board of Trade of the Road Transport Board.

This body, as our readers are aware, was instituted as a war measure in February last for the purpose of co-ordinating the work of existing Government departments in connection with road transport. The Board has also to determine what measures are necessary to ensure the most economic use of road transport vehicles and their efficient allocation for meeting the transport of food, munitions, and other war material, and for the essential needs of the trade and industry of the country, together with any national emergency that may arise. This development may be regarded as the high-water mark on the civil side of the usefulness of motor traction at a period when war activities have well-nigh overburdened the railways. It will be a deeply interesting record of work by the

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MOTOR TRAFFIC.

divisional and local committees charged with carrying out the details of this scheme that the editor of the Year Book will have to include in the pages of his issue for 1919.

To return to the more prosaic features of this year's volume, it must be confessed that the contents are far from being commonplace. The story of the progress of motor transport during the past thirteen years might be invested with a romantic air not to be found in this volume. Instead, it deals with matter of fact records and statistics that are none the less marvellous, and render the book indispensable to all who are concerned with the public utility and industrial sides of motor transport. Briefly outlined, the arrangement of the book of 400 pages is as subjoined :—

Sections I. and II.—Particulars of 395 undertakings engaged in motor transport business, with a capital of £27,000,000, and 351 associated manufacturing companies with a capital of £49,800,000.

Geographical Section.—This includes 775 districts served by motor transport undertakings.

Section III.—A directory of the names and addresses of over 2,000 directors and officials, including many tramway managers.

General Survey Section.—This includes valuable information on the law relating to motor omnibus services ; an article on the "Public Service Motor Policy in 1918," by Mr. S. E. Garcke ; a list of 200 stations for charging electric vehicles ; a list of gas-filling stations in the United Kingdom for motor vehicles ; particulars of petrol and gas orders, etc.; war-time restrictions on lights of motor vehicles ; a list of the principal associations connected with the industry, with brief statements of their objects, etc.

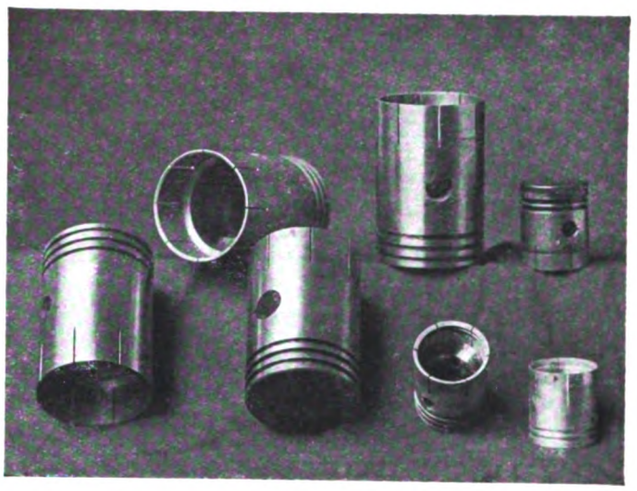
Perhaps the best idea that can be given of the growth of motor transport is conveyed in the statement that of the 395 bodies now mentioned in that connection 72 are municipal authorities. The number of companies and corporations authorised to engage in motor transport business recorded in the first volume was 350 ; the figure rose to 374 in the second issue, and in the present volume it has advanced to 395. Of these 263 are limited liability companies, 72 municipal bodies, and 60 private firms. There has also been an increase in the number of motor vehicle and allied manufacturing undertakings dealt with, the 300 in the first volume having risen to 351, made up of 332 limited liability companies, 16 associations, and 3 private firms. These increases are not the result of developments within the industry (increasing war restrictions having prevented such), but are due to more information being made available about the companies engaged directly or indirectly in motor transport. Not the least useful feature is an introduction and general survey giving a brief history of the motor transport industry down to its partly-arrested development through the war.

All connected with public service undertakings will be interested in an article by Mr. Sidney E. Garcke, discussing the chief problems arising from war regulations and the importance of being prepared to deal with them when peace comes. "The chief problems," says the author, "now occupying attention are (1) the fuel position, (2) the labour question, (3) the spare part difficulty, and (4) maintenance of the roads. The financial position of the majority of undertakings will also require serious consideration in view of reduced services and increasing costs. Omnibuses consume a surprisingly large proportion of the petrol supplies available for civilian use. In spite of many forced economies, and the abolition of pleasure motoring, the amount available for omnibuses is much less than formerly, and a still further reduction of services during the current year may be expected unless the shipping situation undergoes material improvement." Mr. Garcke regrets that any gas used on omnibuses involves a reduction in the allowance of petrol. "It may be argued," he adds, "that the drain on the labour supply involved in the re-opening by the aid of gas of essential means of communication will be more than compensated for by the time saved to the travelling public. This consideration ought to be borne in mind, and every case treated on its merits." In relation to war restrictions, he urges that the industry "should be prepared at the close of the war to give every assistance to the Government at a time when innumerable urgent problems will be pressing for solution. The old and complex law relating to the licensing of omnibus services by municipalities, the case-made law relating to extraordinary traffic, and the general question of funds for the improvement and maintenance of roads will require immediate and careful consideration at the close of hostilities. In the meantime the industry has to consider the possibility that the war may continue for a long time. War legislation affecting omnibuses is now so complicated that the industry is liable to fall into an almost chaotic condition. . . . The omnibus industry is confused and hampered by many departments and controllers, and the resulting muddle is so wasteful that there is likely to be an early attempt to give the industry proper recognition."

AN INNOVATION IN PISTONS.

There has recently been introduced a new piston for motor-car engines, designed to deal with the carbonising problem in a manner that dispenses with the necessity of fitting the usual "scraper" ring. There is also the added advantage of an appreciable saving in weight. Described briefly, it consists of a piston following substantially the common practice, but with a skirt turned to a very slight taper so that it will just not completely enter the cylinder. In this taper portion there are longitudinal slots, or saw cuts. These will be clearly apparent from the accompanying illustrations. The result is that when the piston is pushed into the bore of the cylinder the inherent spring of the metal makes the bottom of the skirt a close fit in the bore.

Thus does the split skirt serve the purpose of a most efficient scraper ring ; and not only that, but also overcomes slap in a most remarkable manner, the piston being a perfect fit in the bore. This allows the full benefit of advanced ignition, and of maximum compression, thus ensuring that the engine can always be run to the



The Aerolite Piston.

fullest advantage. The "Aerolite" piston is, moreover, readily adaptable to all varieties of engines and working conditions, and any desired degree of piston lubrication is obtainable simply by increasing or decreasing the number and size of the slots in the piston skirt. By this quality of ready adjustment it has been found possible to effect considerable economies in oil consumption. In one case, we are informed, there was a reduction of from 1 pint per 150 miles to the same quantity in 800 miles. In another case, the economy was even more remarkable, being from 1 pint in 100 miles to 1 pint in 983 miles.

The foregoing deals only with some of the features and advantages of this invention. In addition it has been adapted to air-pump plungers, and can be used in many cases to replace cup-leathers in pumps when dealing with liquids of a slightly viscous nature. The Aerolite Piston Company, Limited, of Hanover Court Yard, Hanover Street, London, W.1, are prepared to provide technical assistance in making tests on trial sets of pistons, and to consider the granting of limited licences to manufacturers in this country and elsewhere.

AWARD FOR A SAFETY SUGGESTION.—The London "Safety First" Council have awarded the monthly prize for the best safety suggestion to Mr. R. S. Prinsep for the suggestion that doors of taxi-cabs should be hinged near the driver, so that in an emergency persons could alight without being caught by the door and knocked down.

THE PREMIER AND RURAL TRANSPORT.—In his reply to a deputation from the Trades Union Congress Parliamentary Committee, the Prime Minister recently made it perfectly clear that the Government regard increased transport facilities of vital importance in the settlement of soldiers and sailors on the land. He stated that after the war thousands of motor vehicles and many miles of light railway material would be used to develop traffic in rural districts. The whole matter was receiving attention by the members of two committees of experienced men which had recently been appointed by the Government.

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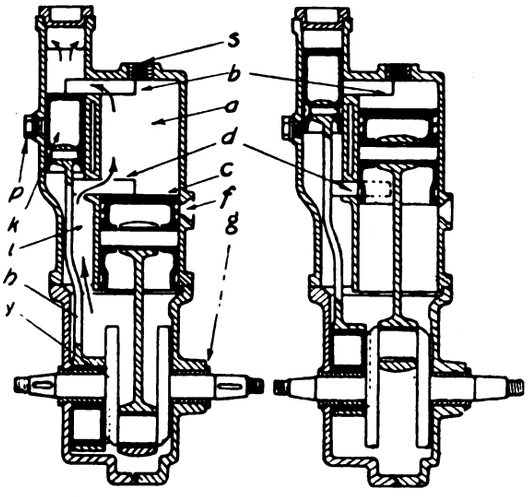
MOTOR TRAFFIC.

THE TILSTON AIR-COOLED ENGINE.

The introduction of the novel two-stroke air-cooled engine by Mr. Edward Tilston, of 59, New Oxford Street, London, has raised considerable controversy amongst automobile engineers as to the practicability of the piston valve principle as applied to internal combustion engines. Hitherto engines constructed upon this principle have not been a success, the chief difficulty being over-



a—cylinder. b—exhaust port. c—piston. d—inlet port from crankcase to cylinder. e—exhaust pipe. i—communicating passage from piston valve to crankcase. k—piston valve. h—eccentric rod. p—plug for taking out gudgeon pin of piston valve. s—sparking plug. y—projection for driving eccentric from crank web.

Fig. 1.—The Tilston Two-Stroke Engine.

heating, due to inefficient cooling and lubrication. In the Tilston engine the inventor claims to have overcome these difficulties, and to have evolved an engine in which, by a system of internal cooling, the temperature of both the piston valve and the working piston are kept constant, and a high state of efficiency maintained.

In the ordinary type of two-stroke engine the exhaust port is placed at the lower end of the cylinder, and as a result of this practice a large proportion of the burnt charge, variously estimated at from 40 to 50 per cent., is left in the cylinder, even when the throttle is fully open. In the Tilston engine it will be noticed by reference to the sectional view that the exhaust port is arranged at the top end of the cylinder, and that when the explosion takes place the position of the piston valve, which controls the exhaust port, is considerably above the combustion space. Therefore when the cool carburetted charge is introduced into the crank case at every revolution, it lies not only inside and around the main piston, but also inside the piston valve. As there is only a thin wall of metal separating the hot explosion from the newly-introduced charge, the excessive heat from the former is absorbed by the latter, which is afterwards passed into the cylinder, thus cooling the piston valves and preventing the dissipation of heat from the outside.

From the foregoing it will be seen that the exhaust in the Tilston engine is completely scavenged from end to end of the cylinder, and the combined displacement of both piston and piston valve is utilised to fill the cylinder with a fresh charge and to dissipate entirely all the burnt gases. Rings are dispensed with in the piston valve, and the metal used for its manufacture is exactly similar to that used in the construction of the cylinder, consequently the co-efficiency of expansion is the same in the piston valve and cylinder. A clearance of one-thousandth part of an inch is allowed between bore and valve. Owing to the stroke of the valve being small, combined with the cooling effect of the charge lying inside, a constant temperature is maintained from end to end of the valve. Free movement is thereby insured, and it is largely due to this fact (in the opinion of the inventor) that the success of the Tilston piston valve has been achieved. The drawing, which is reproduced on this page, represents a well-known type of two-stroke engine, which Mr. Tilston has adapted for his purpose. This design, however, is not intended as a sample of the engine he now proposes to build, but was merely constructed to demonstrate the possibilities of his system.

In Fig. 1 the charge, compressed in the crank chamber, is being admitted through the inlet port (d) to the cylinder (a), and the burnt gases of the previous explosion are being expelled through the exhaust port (b). This will be followed by the closing of the inlet port (d) by the piston (c) rising to compress the charge and the closing of the exhaust port (b) by the piston valve (k), which is operated by the eccentric (y), and the subsequent compression of the charge in the cylinder by the engine piston. As the piston (c) approaches the end of the compression stroke, it uncovers the usual two-stroke inlet port (d), so that vapour is admitted to the crankcase in the usual manner. As both pistons (c) and (k) have been moving upwardly together, their combined displacement is available to fill the cylinder at the end of the next downward stroke of the piston.

On the explosion stroke, closure of the port (d) first occurs and the subsequent compression of the charge in the crankcase. The opening of the exhaust (b) follows, and shortly afterwards the inlet port (d) is opened by the engine piston, and as in the meantime the piston valve (k) has descended, the combined displacement of both the piston and piston valve is available for compressing the charge in the crankcase and forcing it into the cylinder.

In the new engine which Mr. Tilston now proposes to build, instead of operating the piston valve by an eccentric through a cranked connecting rod, this operation will be performed by a crank and a straight connecting rod. The gas obtains admission to the cylinder through a complete ring of holes all round the cylinder, so that, instead of the gas coming in at one side only, it now enters from every direction. Another alteration which is extremely interesting is a small idea for the prevention of backfires in the silencer, as Mr. Tilston considers this fault of the two-stroke to be one of its worst. He now arranges that when the compression release valve is in operation the gases are passed out through the exhaust pipe until the piston has nearly reached the top of the stroke.

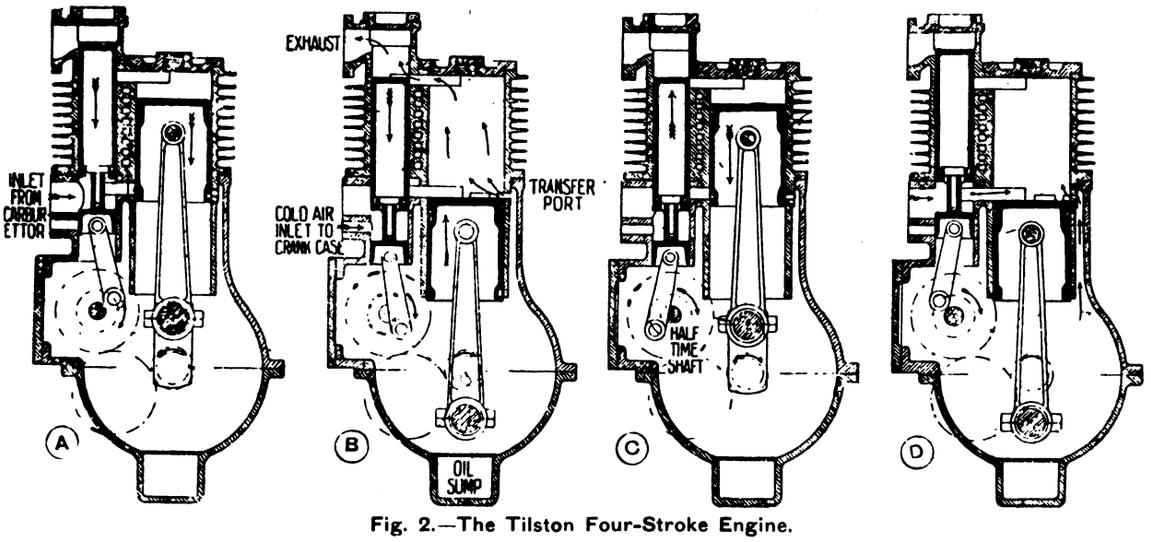


Fig. 2.—The Tilston Four-Stroke Engine.

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MOTOR TRAFFIC.

At this point the piston valve closes off the exit from the pipe connecting the compression release valve to the exhaust port, so that when the explosion, however light it may be, takes place in the cylinder it cannot be communicated through to the unburnt gases in the exhaust pipe and silencer.

Although practical tests have so far been confined to the two-stroke type of engine, the inventor is confident that his piston valve system will be equally efficient in engines of all powers. Already the design for a four-stroke engine has been evolved, and, as will be seen from the foregoing drawing, the fundamental principle is the same.

The cycle of operations in the four-stroke engine is shown in Fig. 2 and is as follows:—In **A** the piston is shown at the end of the explosion stroke, whilst **B** shows the piston at the end of the compression stroke just on the point of firing. **C** is a section through the exhaust port (b). **D** is a diagram showing position of port openings.

ELECTRIC WAGON AND RAIL CARRIER.

Southampton Corporation Tramways Department, for carrying 40-ft. rails, have recently purchased a trailer for use with their depot wagon. The vehicle is equipped with Edison accumulators, and the trailer has been supplied by the Equipment and Engineering Company, of 2 and 3, Norfolk Street, London, W.C. Mr. W. T. Robson, general manager of the tramways, has found the depot wagon a very satisfactory vehicle, and with the trailer it is now possible to carry the 40-ft. rails with convenience and despatch. In the illustration the wagon is shown drawing the trailer loaded with rails.

Southampton Battery Wagon and Rail Carrier.

OIL FUEL FROM COAL.

NEW VENTURE BY THE GENERAL ELECTRIC COMPANY.

The General Electric Company have, it is understood, acquired the sole rights of a process for the recovery of oil and spirit from coal; and Mr. A. H. Seabrook, who recently resigned his position as general manager of the electricity undertaking of the Marylebone Borough Council has joined the G.E.C. with a view to taking an active interest in the development of the scheme.

TWO THOUSAND POUNDS PRIZE FOR MINERAL OIL FUEL.

The Government have decided to offer a prize of £2,000 for a process whereby a mixture of dehydrated coal tar and mineral petroleum oils can be utilised for Admiralty purposes. Due regard must be paid to the necessity for economy, both with regard to labour and material. Full particulars of the requirements can be obtained from the Controller, Munitions Mineral Oil Production Department, 2, Northumberland Avenue, London, W.C.2.

MOTOR VEHICLES FOR MUNICIPALITIES.

HEYWOOD COUNCIL have purchased a lorry and ambulance.

INVERNESS COUNCIL have decided to purchase a motor fire engine.

RICHMOND COUNCIL have applied for a priority certificate to purchase a steam wagon.

SHEFFIELD CORPORATION have obtained a Ford van for use in the public health department.

GLOUCESTER CORPORATION propose to provide a motor car for the use of the chief constable.

EAST HAM CORPORATION have obtained a second-hand Austin motor car for the use of officials.

BEVERLEY COUNCIL have purchased a steam wagon fitted with a tipping body at a cost of £1,034.

PORTSMOUTH CORPORATION are purchasing a Foden steam wagon for use in the tramways department.

STRATFORD-ON-AVON COUNCIL have decided to purchase a motor fire engine fitted with escape appliances.

DERBYSHIRE COUNTY COUNCIL have agreed to purchase two steam wagons for the highways department, at £2,000.

ALDERSHOT URBAN COUNCIL have accepted the tender of Leyland Motors, Limited, for a motor fire engine at £1,200.

CHELMSFORD CORPORATION have appointed a committee to report upon the advantages of mechanical traction.

NEWBURY RURAL COUNCIL have approved of a recommendation for the purchase of a steam tractor and two trailers.

ILFORD COUNCIL have under consideration a recommendation for the purchase of a motor car for the use of the officials.

HOVE CORPORATION have agreed to obtain a lorry for use in carting coal from the railway to the electricity works.

ANNAN URBAN COUNCIL have purchased a new 12-ton steam roller, a sleeping van, and a 5-ton wagon fitted with a tipping body.

STRETFORD URBAN COUNCIL have applied for priority certificates for the purchase of three motor vans for house refuse collection.

MORECAMBE COUNCIL have received the sanction of the Local Government Board to raise a loan for their electric omnibus scheme.

BRADFORD CITY COUNCIL have accepted the tender of the Chloride Electrical Storage Company for the maintenance of battery vehicles.

ABERDEEN CORPORATION have appointed a committee to consider the substitution of motor fire appliances for the present horse machines.

WALSALL CORPORATION have placed a contract with the Yorkshire Commercial Motor Company for a steam wagon fitted with a tank for street watering, at £1,034.

DEPTFORD COUNCIL have accepted the tender of E. and H. Horn, Limited, of Camberwell, for the supply of a dust collecting body to be fitted to an Austin chassis, at £122.

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MOTOR TRAFFIC.

Glasgow Corporation have under consideration a recommendation from the Fire Committee for the purchase of a further machine from Halley's Industrial Motors, Limited.

Cardiff Corporation have made an application for a priority certificate to enable the Watch Committee to purchase a motor fire engine and escape, and also a turntable fire escape.

East Riding County Council, finding it impossible to get their contracts renewed for carting road metal, have decided to purchase a steam wagon fitted with tipping body at a cost of £1,050.

Walthamstow Council have accepted the tender of Clayton and Shuttleworth, Limited, of Lincoln, for the supply of a steam wagon fitted with mechanical tipping gear at £993. The tipping body is to be interchangeable with a 1,000-gallon water tank.

Lancaster Council have decided to considerably increase their fleet of electric motor vehicles. At the present time four omnibuses are in regular service, and the working of these has proved so satisfactory that it is suggested that a further eight should be obtained. Application has been made to the Local Government Board for a provisional order to enable the Corporation to carry out the scheme.

MOTOR TRAFFIC NOTES.

Women as Tractor Drivers.—The Food Production Department have issued an appeal for 300 more women to learn tractor driving. Numbers of soldiers of low category have been transferred to agricultural work, and are being trained for tractor driving.

Motor Omnibuses Replace Railway Service.—The Llandudno branch of the London and North Western Railway having been closed on Sundays, the train service has been replaced by a service of motor omnibuses running from Llandudno Junction to Llandudno.

Melbourne Coal Gas Experiments.—Through their Melbourne branch the Dunlop Rubber Company have received an order from the Globe Motor and Taxi-cab Company, of Melbourne, for the supply of flexible gas containers for the purpose of carrying out trials of coal gas as a substitute for petrol.

Side Life-Guards for Lorries.—Acting upon the advice of Dr. Waldo, the coroner, a London jury, in returning a verdict of accidental death at an inquest upon a man who had been killed by a motor lorry, added a rider recommending that all heavy commercial vehicles should be fitted with side life-guards.

increase in wages granted to their employees as a result of the recent award of the Committee on Production has made the readjustment necessary.

Commercial Vehicle Development.—Mr. H. C. Underdown, chairman of the Motor Industry Branch Committee under the Engineering Trade Committee of the Ministry of Reconstruction, in a letter addressed to motor manufacturers, states that the Ministry of Reconstruction has under consideration the possibility of granting assistance to manufacturers in the motor and allied industries in the matter of the construction of experimental post-war models of their products.

Steam Omnibus Seating 34 Passengers, Specially Designed by the Yorkshire Commercial Motor Co.

Government Vehicles and Rural Transport Schemes.—Acting upon the suggestion recently made by the Ministry of Reconstruction, viz., that at the conclusion of the war many Government motor lorries may be available for transport in rural localities, the Somerset County Council have asked the local authorities in the county for suggestions in reference to the idea. Yeovil Rural Council have replied that improved means of transport are needed both in regard to the conveyance of persons and agricultural produce. The Council consider that motor lorries and steam tractors could advantageously be used for that purpose as well as in the haulage of road materials.

A Group of Wolseley Armoured Cars and Vans Ready for the Front.

Motor Licences in Three Canadian Provinces.—66,545 motor vehicles were licensed in Manitoba, Alberta, and Saskatchewan during 1917. This is an increase of 29,727, or 80 per cent., over 1916. The greatest gains were made in Saskatchewan, where 33,563 motor vehicles were licensed, as compared with 15,654 in 1916.

Army Motor Optical Shops.—Various types of 5-ton motor trucks are being equipped with complete shops to manufacture lenses for spectacles for American troops in France. The vehicles will operate within fifteen to fifty miles of the front, and there will be four men to each truck, two being drivers and two optical repairers.

London Omnibus Fares.—The London General Omnibus Company have made extensive alterations in the scale of fares on the majority of the routes traversed by their vehicles. The substantial

Suspension of the Hanley-Wolstanton Omnibus Service.—At the meeting of Stoke-on-Trent Corporation on May 23 it was announced that the omnibus service between Hanley and Wolstanton had been suspended owing to the restrictions imposed by the Petrol Control Committee. The Potteries Electric Traction Company have informed the Town Clerk that the service was discontinued at the instigation of the Petrol Control Committee. It is also stated that the Committee informed the company that they ought not to be running a service which is even in part catered for by the tramways. The Council decided to interview the Petrol Control Committee, on the ground that petrol is being used for less essential purposes. While the journey by omnibus occupies only a quarter of an hour, travelling by roundabout car and train routes takes about an hour.

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THE

Tramway & Railway World

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

Telegrams: "TRAMIGRO, ESTRAND, LONDON."

Telephone: GERRARD 2948.

WEEKLY LIST OF TENDERS INVITED.

BOROUGH OF RICHMOND (SURREY).

To Steam Motor Wagon Engineers.

The Council are prepared to receive Tenders for the supply of a 3- to 4-ton Steam Motor Tipping Wagon, fitted with interchangeable body—i.e., wagon body having a capacity of about 5½ cubic yards and a watering tank with a capacity of about 650 gallons.

Further particulars may be obtained on application to Mr. J. H. Brierley, Borough Surveyor, Town Hall, Richmond, Surrey.

The Council do not bind themselves to accept the lowest or any Tender.

Sealed Tenders, properly endorsed, to be sent to the undersigned on or before Thursday, the 27th inst.

HENRY SAGAR,
Town Clerk.

Town Hall, Richmond, Surrey.
11th June, 1918.

COUNTY BOROUGH OF WARRINGTON.

Electricity Department.

The Electricity and Tramways Committee of the County Borough of Warrington invite Tenders for the following:—

High Tension Lead Covered Cable and Medium Tension Rubber Covered Cable.

Specification and Form of Tender can be obtained from the undersigned on payment of one guinea, which will be returned on receipt of a bona fide tender.

Five shillings will be charged for extra copies of the specification.

Tenders, addressed to the Chairman of the Electricity and Tramways Committee, Town Hall, Warrington, must be sealed with wax and endorsed "Tender for Cable." and delivered not later than 12 o'clock noon on Tuesday, June 18, 1918.

The lowest or any tender will not necessarily be accepted.

F. V. L. MATHIAS, M.I.E.E.
Borough Electrical and Tramways Engineer.

Howley, Warrington.

POSITIONS VACANT.

Overhead Linesman.

Wanted, Overhead Linesman for West of Scotland tramways, certificated munitions work. State age, experience. Salary 1s. 3d. per hour for all time. Apply, to Box 88, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

COUNTY BOROUGH OF SUNDERLAND.

Sub-Station Superintendent.

Wanted, Sub-Station Superintendent, with good all-round general knowledge of 3-phase and D.C. operation.

Inclusive salary at the rate of £250 per annum.

Apply, in own handwriting, stating age and particulars of experience, and enclosing copy of recent testimonials, to

ALFRED S. BLACKMAN,
Engineer and General Manager.

Electricity Offices, Dunning Street, Sunderland.

COUNTY BOROUGH OF SUNDERLAND.

Engineer Clerk of Works.

Wanted, Engineer Clerk of Works, temporarily, to superintend the installation of Electricity Works Plant. Inclusive salary at the rate of £300 per annum.

Apply, in own handwriting, stating age and particulars of experience, and enclosing copy of recent testimonials, to

ALFRED S. BLACKMAN,
Engineer and General Manager.

Electricity Offices, Dunning Street, Sunderland.

TRAFFIC SUPERINTENDENT.

Traffic Superintendent required. Must be used to controlling traffic, compiling time-tables, arranging running shifts and carrying out all duties in connection with traffic. Preference given to those who have held a similar position. State wages required.

MAIDSTONE & DISTRICT MOTOR SERVICES, LIMITED,
Maidstone.

TRAFFIC INSPECTORS.

Two Traffic Inspectors required. Must be capable of controlling and arranging running. Ineligible for Military service. State age, whether married, past experience, and enclose copy of references.

MAIDSTONE & DISTRICT MOTOR SERVICES, LIMITED,
Maidstone.

CAR SHED FITTER.

Wanted, Car Shed Fitter for the repairs and maintenance of 21-E. Brill trucks and G.E. 58 equipments; commencing wages £3 per week, including war bonus. District, South Wales. Only competent men need apply.—Box No. 89, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

TRAFFIC SUPERINTENDENT.

Wanted, Traffic Superintendent to take charge of the running of a small tramway system in South Wales. Men with knowledge of car equipments preferred. Commencing salary £175 per annum. State position with regard to Military Service.—Apply to Box No. 90, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

FOR SALE.

TRACTION MOTORS.

The Sheffield Tramways are prepared to dispose of 12 G.E. 52 Traction Motors which are in excellent condition and ready for immediate service.

Further particulars can be obtained from A. R. Fearnley, General Manager, Division Street, Sheffield.

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Tramway Engineers,

OVERHEAD LINE MATERIALS AND SUPPLIES.

Sole Manufacturers of

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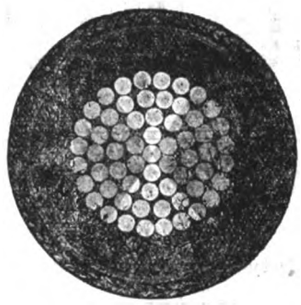
Telegrams: "Controllers, Leeds." Telephone: 26883 Leeds.

160, WOODHOUSE LANE, LEEDS.

1837.  1918.

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W. T. HENLEY'S TELEGRAPH WORKS COMPANY, LIMITED, Blomfield Street, LONDON, E.C.

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OUR RATTAN

(NATURAL, GLAZE, DULL FINISH, OR COLOURED) in twill, straight, or fancy weaves, canvas backed or unbacked, is

BRITISH MADE THROUGHOUT

from the splitting of the cane to the finished article.

We hold **LARGE STOCKS OF RAW MATERIALS** and can GUARANTEE PROMPT DELIVERIES.

Particulars of other **BRITISH SPECIALITIES** *upon application.*

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THE
Tramway AND Railway World

Established in 1892 and Published by

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AMBERLEY HOUSE, NORFOLK STREET, LONDON, W.C.

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FOR ALL PLACES ABROAD—Thirty Shillings per annum.

SATURDAY, JUNE 15, 1918.

A NATIONAL TRAMWAY COUNCIL.

IT is possible that the tramway industry may be among the first to set up a joint industrial council. The conditions even before the war were such as to afford a basis for the constitution of a body representing all interests concerned. Practically all tramway owners, both municipalities and companies, are members either of the Municipal Tramways Association or the Tramways and Light Railways Association, and there was a union of employees that could claim to represent a large percentage of men engaged in tramway service. Since the war the two tramway associations have proved invaluable to their members, and they have become more firmly established than ever before. They have also been drawn more closely together by common difficulties and requirements, and are prepared cordially to co-operate in any course that will further the interests of the industry as a whole. On the other hand, the employees have extended and unified their organisation and are in a position to appoint members of a joint council who will be able to act as authorised representatives of the employees as a body. The foundation for a national organisation is thus available and little time has been lost since the report of the Committee on Joint Standing Industrial Councils was presented about a year ago in efforts to put their recommendations into practice. The history of the past few months has shown clearly enough the necessity for some method of bringing tramway employers and employees into closer touch, of enabling each side to present to the other with the least possible delay and friction their respective views on matters that contain elements of difference. The recommendations of the Committee on Industrial Councils thus appeal to the leaders on both sides, and there has been on the whole a gratifying readiness to put aside old prejudices and to advance along new lines. While it would be premature to say that details of the scheme have yet been settled, it is possible to forecast the organisation of a council which we have no doubt will soon be successfully formed. Several conferences have taken place between the two tramway associations, and there have also been conferences with representatives of the men, and an atmosphere has been created which is thoroughly helpful to the objects in view. Indeed, negotiations have advanced so far that a small sub-committee, representing both the employers and the men, has met in London this week with the object of drafting a constitution for the proposed council. Details have yet to be worked out; but it is probable that the council will consist of twenty-two members, one-half representing the men and the other half the employers. The latter would be appointed by the two associations in some agreed upon proportion, the larger number naturally being appointed by the Municipal Tramways Association. The extent of the powers of the council remain to be determined, but it is generally felt that they should be so broad as to secure the fullest measure of co-operation between the authorities and the men. What the employees desire is a greater opportunity of participating in the organisation of the industry, and, under the conditions which will exist after the war, it is essential to public welfare that their wishes should be considered.

SHEFFIELD CORPORATION BILL.

TRAMWAYS EXTENSIONS AND GOODS TRAFFIC.

Mr. R. H. Wilkinson, general manager of Huddersfield Corporation tramways, in giving evidence before a House of Commons Committee which is considering the Sheffield Corporation Bill, said that in his view the carriage of goods and parcels by tramways was the most economical method of transport, and he considered the powers sought by the Sheffield Corporation tramways were in the interests of that city. Huddersfield's maximum charge for the carriage of coal by tramway was 3d. per ton mile. In the Sheffield bill it is proposed to charge a maximum of 2d. per ton mile.

Mr. Freeman, K.C., on behalf of the Sheffield Horse and Motor Owners' Association, contended that there was no case for conferring the powers asked for. The parcel traffic of Sheffield had been satisfactorily carried under the existing arrangements. Mr. Sharpley, general manager of the Association, said that the present arrangements worked well, and he did not think there was any necessity for the change. Mr. H. Lloyd addressed the Committee in opposition to the clause on behalf of the Great Central Railway Company. He said Parliament intended that tramways should be used primarily for passenger traffic, and the Committee should pause before they allowed Sheffield to evade restrictions which had been impressed upon them in common with other tramway undertakings. He contended that Sheffield had not prepared any definite scheme, and their proposals in regard to working agreements were too vague to justify the Committee in giving their sanction to the proposal.

Mr. A. R. Fearnley, General Manager of Sheffield Tramways, stated that the tramway traffic had increased enormously in recent years, and there was a great need for the two proposed extensions. During the past 18 years the tramways had relieved local rates to the extent of £372,499, which had resulted in a reduction in railway rateable assessment of 5d. in the £.

OMNIBUS COMPANY AND WALSALL CORPORATION.

Justices Avory and Shearman, sitting as a Divisional Court of King's Bench recently granted a rule nisi calling upon the Walsall Corporation to show cause why a writ of mandamus should not issue against them to hear and determine an application for licences for motor omnibuses.

Mr. Tomlin, K.C., who moved for the rule, said application to grant licences was made to the Corporation under the Towns Police Clauses Act. A company had since 1913 been running a service of motor omnibuses between Walsall and Birmingham, under permission of the Birmingham Corporation, and also by the consent of the Walsall Corporation. A sum of £300 a year was paid to the Walsall body, as the Corporation thought the service might interfere with their tramway system. The consent was given to the year 1917, and notice was given to the Omnibus Company to terminate the arrangement. The company, however, continued to run their services after the Walsall Corporation had refused to renew their permission to allow the omnibuses to run, and a summons under the Towns Police Clauses Act was the result. The company then made a second application for a renewal of the consent, but the Council, it was now said, decided against them on matters which were entirely extraneous to the real points on which the application was based.

Mr. Justice Avory, in granting the rule, said the Court would not express any opinion on the merits of the case.

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INCREASED TRAMWAY FARES.

A Committee of the Bath Town Council has considered the request of the Bath Electric Tramways, Ltd., for the support of the Council to their application to the Board of Trade for power to increase the fares on their system, owing to the rise in the cost of materials, wages, and war bonuses, and have recommended the Council to assent to an increase of a halfpenny on all fares, including workmen's and transfer fares, but excluding fares for children under nine years of age. Such increases are to operate for the duration of the war and six calendar months thereafter.

At a meeting of the Bradford Tramways Committee on June 10, the general manager (Mr. C. J. Spencer) reported that in the nine days since the fares had been increased 50 per cent. the receipts amounted to £13,099, as against £9,905 in the corresponding period of last year. It was estimated that the increase would be 30 per cent., so that for the first nine days the expectations have been more than met.

At a meeting of the Manchester Tramways Committee on June 11, it was stated that the work of revising fares and stages was progressing, and that the new schedule would be submitted to the Council on July 3. The basis of the new scale would be one penny for the first two miles measured from the centre of the city.

The Darlington Trades and Labour Council have discussed the proposed increase in fares on the Darlington Corporation tramways, and protest against the attempt to abolish halfpenny fares.

Alderman E. Russell Taylor, chairman of Liverpool Corporation Tramways Committee, at a meeting of the City Council on June 5 moved the readjustment of tramway stages and fares in the manner suggested in the published report of the general manager. The basis of the revision is that all initial penny routes should be two miles in length, and that beyond that distance there should be halfpenny stages. The changes were required for financial reasons which must arise at the conclusion of the war. Income would quickly diminish, but the abnormal working expenses would decline but slowly. Their expenses were now £224,300 more than in 1913. The proposal was adopted, but the Labour Party intimated their intention to oppose the increase in fares.

Belfast Tramways Committee has submitted a new scale of fares to the City Council This scale is practically a penny per mile, with workmen's fares at a halfpenny a mile. The present 1½d. fares will thus be increased to 2d., while intermediate stages will be shortened to meet the demand of a penny per mile, which is the present Parliamentary limit of charge by the Corporation.

A week ago the fares on the northern section of the London County Council tramways were advanced in the same way as those on the south side of the river. Children's tickets were abolished and all halfpenny fares disappeared. Three-halfpenny stages went up to 2d., 2½d. stages to 3d., and so on.

EDINBURGH TRAMWAY MANAGERSHIP.

The Tramways Committee of Edinburgh Town Council has selected from the 27 applicants for the position of general manager of the Corporation Tramways a short list of five, which is as follows :—

Mr. William Clough, General Manager, Bury Corporation Tramways ;
Mr. Fred. Coutts, Engineer and General Manager, Paisley District Tramway Company ;
Mr. William J. McCombe, General Manager, Hull Corporation Tramways ;
Mr. R. Stuart Pilcher, General Manager and Engineer, Aberdeen Corporation Tramways ;
Mr. R. H. Wilkinson, General Manager and Engineer, Huddersfield Corporation Tramways.

This short list has been referred to a sub-committee, who will interview the applicants and submit a report to the Tramways Committee at an early date. There was considerable discussion over the question of what action should be taken with regard to two leading tramway managers in England who had intimated their desire to become candidates if the salary was raised to £1,250. It was agreed, however, that no action should be taken in the meantime, as if the salary proposed were altered the position would have to be advertised again at the higher figure. The probability is, therefore, that the manager will be chosen from the five selected for interview by the sub-committee.

TRAMWAYS AND LIGHT RAILWAYS ASSOCIATION.

ANNUAL CONFERENCE.

We are informed by the secretary of the Tramways and Light Railways Association that the Council have decided that the usual annual congress shall be held on Friday, July 12. In view of the present conditions, which make it inconvenient for managers to be absent from their posts longer than necessary, the programme will, as last year, occupy only a half-day. The meeting will be held at Caxton Hall, Westminster, at 3 p.m., immediately after the Annual General Meeting, called for 2.30. No papers will be read, but a discussion will take place on the formation of an Industrial Council for the tramway industry, wages, fares, and several other matters which are of immediate interest to all tramway undertakings.

The members will meet informally at dinner at the Trocadero Restaurant in the evening, when the Right Hon. Viscount Chilston will preside.

SAFETY FIRST IN INDUSTRY.

A conference, arranged by the London Safety First Council, was held at the Mansion House on Wednesday afternoon to inaugurate a national industrial "safety first" campaign. Lord Leverhulme, who presided, said that in Germany £50,000,000 was saved in industry every year by attention to "safety first" appliances. The object of the new movement was to ensure that we should have throughout the United Kingdom such a condition of "safety first" as would give us the equipment for winning the industrial war after we had won the military war.

Mr. W. Hayes Fisher, M.P., President of the Local Government Board, welcomed the movement, to which he promised to give every assistance. It was satisfactory, he said, to learn that from street accidents the sphere of operations of the Safety First Council was to be extended to accidents arising from industrial occupations. They must use education to make people see that it was their duty to themselves, to their families, and to the State to take every possible precaution to preserve their lives.

Mr. G. Roberts, M.P., Minister of Labour, said that no works should be tolerated in the country unless they were sanitary and properly lighted and the machinery was safeguarded. Then they would be entitled to expect the workers to take every care to avoid accidents and disease. They must insist upon certain standards of equipment in the various works and factories, and in this matter he promised the support of his Department.

Mr. W. Brace, M.P., Under-Secretary for the Home Department, wished the movement every success,and assured the promoters of the co-operation of the Home Office.

MISCELLANEOUS NEWS AND NOTES.

Diesel Engines provide the means of propulsion for the German submarines.

Women Drivers for Dover.—Dover Corporation Tramways are to employ women drivers.

Motor Vehicles in the War.—Mr. J. N. Willys estimates that more than 300,000 motor vehicles are being used by the armies on all fronts.

Sheffield Tramways Committee propose to purchase some tramway cars from the London County Council at an approximate cost of £7,500.

Track Renewal at Rotherham.—The Rotherham Tramways Committee propose to reconstruct about five miles of track so soon as labour and materials are available. The estimated cost is £55,000.

Skip-Stop Services at Manchester.—Manchester Tramways Committee are carrying out the idea of skip-stop services. The routes have been surveyed and the stops to be eliminated have been selected.

Special Tramway Rate at Dover.—Dover magistrates recently dealt with about 150 summonses arising out of a special rate of 1s. 6d. in the £ which was required to meet the tramway accident compensations.

Burnley Dispute Referred to Arbitration.—Burnley Tramways Committee have decided to refer matters in dispute between certain employees and the committee to the Committee on Production for arbitration.

New Rails for Bolton.—The Bolton Tramways Committee have received the sanction of the Tramways (Board of Trade) Committee for the purchase of 100 tons of tramway rails from Bolckow, Vaughan and Company, Ltd., Middlesbrough.

Injury in Tramcar Collision.—James M'Guigan, of Glasgow, sued the Corporation of Glasgow for £750 damages in respect of injuries received while a passenger through a collision between two cars. The Corporation admitted their liability, but pleaded that the sum sued for was excessive. Lord Sands granted the plaintiff £140 and expenses.

Electric Power Supply.—In the House of Commons on Thursday, Mr. Jardine asked the President of the Board of Trade what action he proposed to take on the report of the Committee on Electric Power Supply. Sir Albert Stanley replied that the report was receiving careful consideration. It raised issues of great importance, but no time would be lost in dealing with the matter.

Loans for Extensions.—The Local Government Board have sanctioned a loan of £310,750 for the extension of the Belfast electricity undertaking. A temporary loan of £90,000 is to be raised for the part of the work to be first carried out. Colchester Town Council is applying to the Local Government Board for sanction for the loan of £9,500, the amount required for a new generating set.

Tramways (Board of Trade) Committee.—At a meeting of the advisory committee of Area No. 2, held recently, a letter was received from Mr. W. T. Robson, general manager of the Southampton Corporation Tramways, resigning the position of honorary secretary on account of ill-health. Mr. G. F. Craven, general manager of Reading Corporation Tramways, was elected to fill the vacancy.

Settlement at Plymouth.—Plymouth tramway employees' branch of the Dockers Union, has passed the following resolution :—"That this meeting, having heard the report of the representatives of the union who waited on the Tramways Committee, hereby instructs the officials to accept the terms now submitted, i.e., the grading of inspectors and conductors, and decide to postpone the demand for an immediate 48 hours week on account of the difficulty of securing the necessary labour in the present national crisis, subject to the interpretation of the award proving satisfactory at the interview to be arranged with the town clerk.

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Exemptions Withdrawn.—An order issued by the Minister of National Service withdraws, as from June 22, certicates of exemption held by various tramway workers of specified age. After the date, mentioned, the men will be called for miltary service. The only appeal allowed is on personal grounds, and applications to this effect must be made to the Tribunal not later than June 26.

Omnibuses as National Kitchens.—A number of omnibuses equipped as travelling kitchens will be at work within the next few weeks in the London district. It will be remembered that a Halifax tramway car has been running as a kitchen for some weeks. The omnibus as a travelling kitchen is a development of the scheme introduced by Alderman F. C. Spencer of Bradford, on behalf of the Ministry of Food.

War Bonus to Managers.—The Bournemouth Town Council have approved the recommendation of the Tramways Committee that a bonus of 1 per cent. on the net profits for the year be granted to the general manager and the assistant manager, in the proportion of four-fifths to the general manager and one-fifth to the assistant manager. This bonus is to be regarded as in respect of the work of the year covered by the report.

Reduction in Car Services in Bournemouth.—With a view to economy in current, 25 per cent. of the stopping places on the Bournemouth Corporation tramways have been cancelled. The Tramways Committee have received petitions from Poole against the restricted service on Sundays, but after reconsideration they have decided that it is impracticable to re-establish the services, which have been suspended in Bournemouth without complaint.

Edinburgh Tramway Fares.—Mr. W. J. M'Laren recently brought before the Tramways Committee of the Edinburgh Town Council a suggestion that when the tramways are taken over next year by the Corporation, the system of a universal fare for any distance should be introduced, following the scheme very generally adopted in Canada and the United States. A report is to be prepared for the Committee, who it is stated were favourably impressed by Mr. M'Laren's arguments.

Facilities to Wounded Soldiers.—Mr. F. H. Corson, general manager and engineer of the City of Gloucester light railways, informs us that from replies to inquiries made by the Electricity and Light Railways Committee, it appears that of 82 tramway undertakings, 56 carry wounded soldiers in the uniform of the local hospitals free of charge. Among 26 undertakings which do not, are nine which give specially low rates, and eight where the concession has been given and subsequently withdrawn.

Collision at Blackburn.—Two electric cars came into collision on June 7 between the Mother Red-Cap Inn in Blackburn Road and the Church Cricket Ground. In a dense fog two cars, one belonging to the Accrington Corporation, and the other to the Blackburn Corporation, going in opposite directions, came on to the single line. When the drivers realised what had happened they were too near to avoid a collision. The two cars were smashed in front, and the window glasses were broken. The driver of the Blackburn car was slightly hurt, and the driver of the Accrington car was badly injured. The cars were about half full of passengers.

Fine for Avoiding Payment of Fare.—At the Bristol Police Court, on June 7, William G. North was summoned for wilfully proceeding on a tramway car beyond the distance for which he had paid his fare and for attempting to avoid payment of the additional fare. There was a further summons for neglecting to leave the car at the point to which he had paid his fare. The defendant admitted that he had exceeded the penny journey, and offered to pay the money when challenged by an inspector. He pleaded not guilty, and said that when he entered the car he understood that it was going into the depot, and so only paid a penny. The defendant was fined 25s.

Municipal Tramways Association.—In a note under this heading in our last issue, it was stated that a meeting of the executive Council of the Municipal Tramways Association had been held to consider further the action to be taken with regard to the application for a 12½ per cent. bonus, which is shortly to come before the Committee on Production. The meeting in question was, however, a meeting of the Municipal Tramways Conference which was convened recently by the chairman of the Glasgow and the Manchester Corporation Tramways Committees. The Municipal Tramways Association as such are not immediately concerned in the matter.

L. C. C. Tramway Matters.—Mr. G. H. Hume, Chairman of the Highways Committee, in reply to a question by Mr. J. G. Gilbert, M.P., at the meeting of London County Council on Tuesday, stated that the Council had agreed to spend £6,250 per annum in displayed advertisements of the tramway services, and that the general manager attached great importance to continuing the publicity. In reply to another question, Mr. Hume said that the transfer fares, children's fares and the intermediate ½d. fares were withdrawn on Saturday last. Other fares would be altered as soon as arrangements could be made with the undertakings with which they had through running arrangements.

Damages Against Lanarkshire Tramways Company.—In an action brought against the Lanarkshire Tramways Company by Mrs. Bridget Bradley in the Court of Sessions, Edinburgh, Lord Sands granted a decree for £45 with expenses, and held that there was default on the part of the defendants' servants, but that contributory negligence had not been proved. The pursuer claimed £300 damages in respect of injuries received in October last. On boarding one of the tramway cars at Blantyre, the conductress told the pursuer that it was a workman's car. When she was in the act of descending, the car, she said, started forward, with the result that she fell in the street. The company denied fault, and pleaded that the pursuer stepped off the car while it was in motion.

Protest Against Women Drivers.—Women conductors on the Walthamstow tramways have protested against the employment of women drivers. They say that they do not feel safe behind a woman driver, adding that it is often difficult for a man to hold up a full car on slippery rails. The male employees at Walthamstow assert that there is no occasion for the employment of women, as there are plenty of men available for the work. It is alleged that no fewer than 1,700 discharged soldiers have made application to the Council for employment. Mr. William Murray, the general manager, has, however, reluctantly come to the conclusion that discharged soldiers are not suitable for employment as drivers. Women conductors in Scotland appear to have no lack of confidence in the women who are driving the cars there. As stated in our issue of May 16, in thirteen undertakings in Scotland over 450 women drivers are employed. Nearly 250 are at work in Glasgow alone. The ratio of women drivers employed in Scotland is 18·6.

Edinburgh-Queensferry Tramway.—A large number of petitions have been lodged against the application of the Edinburgh Corporation for a provisional order to construct these tramways. Among the petitioners are the Cockburn Association, which deals with the project from the practical and financial point of view, the proprietors and tenants, Randolph Cliff; owners and ratepayers of Edinburgh; citizens and users of roads, etc.; Edinburgh and District Motor Co. (Ltd.); Scottish Motor Traction Co. (Ltd.); Dalmeny Oil Company (Ltd.); Oakbank Oil Company; North British Railway Company; the Earl of Rosebery; Linlithgow County Council; Edinburgh Parish Council; Caledonian Railway Company; Midlothian County Council; Marquess of Linlithgow; James Gibson. The motor omnibus companies who are objecting have presented similar petitions, agreeing that there is no public necessity for the tramway scheme, as ample means of communication exist. They advance the view that so far from being a public benefit, the proposed tramway scheme would seriously injure the city by ruining one of its finest approaches. The route from Edinburgh to Queensferry, they urge, constitutes one of the principal objects of interest to tourists and holiday-makers, and by destroying or impairing this feature the tramway would strike at the very traffic it is designing to cater for. The Edinburgh *Evening News* remarks that such solicitude on the part of people who have flooded Princes Street and the finest approaches to the city with inflated gas bags, elevated on the top of ungainly omnibuses, may be heartfelt, but it is not convincing.

PERSONAL.

Mr. Lachlan Mackinnon, traffic manager, has been appointed deputy general manager of the Glasgow Corporation Tramways.

Mr. O. F. Francis, electrical engineer and tramways manager, of Kirkcaldy Corporation, has been granted an increase in salary from £400 to £450 per annum.

Mr. O. C. Power, traffic manager of the Birmingham and Midland Motor Omnibus Company, has been elected a member of the general committee of the Commercial Motor Users' Association.

Regimental Sergeant-Major J. R. Jones, Royal Welsh Fusiliers, who has been awarded a D.C.M., was formerly a motorman in the employ of the West Ham Corporation tramways department.

Lieutenant L. C. F. Bellamy, R.E., has been awarded the Military Cross. He was also mentioned in Sir Douglas Haig's despatch of April 7, issued by the War Office on May 21. Mr. Bellamy is a son of the late Mr. C. R. Bellamy, general manager of the Liverpool Corporation Tramways. He resigned his position as manager of Ilkeston Corporation tramways in September, 1914, to join the Forces.

FINANCIAL REPORTS AND MEETINGS.

Norwich Electric Tramways Company.—A dividend of 6 per cent. has been paid for the year ended June 30, 1917.

Manila Electric Railroad and Lighting Corporation.—A dividend of 1½ per cent. ($1·50) per share has been declared for the quarter ended June 30.

Coventry Chain Co., Ltd.—An interim dividend of 6 per cent. per annum (7 1-5d. per share) has been declared on the ordinary shares for the half year ended June 30. The dividend last year was at the same rate.

Yorkshire (West Riding) Electric Tramways Co., Ltd.—The directors have decided to pay an interim dividend of 3 per cent., (being at the rate of 6 per cent. per annum) on the 6 per cent. cumulative preference shares for the half year ending June 30, 1918.

New General Traction Company.—The revenue for the year ended March 31 amounted to £18,575. General expenses amounted to £1,191, and debenture interest, less tax, to £5,708, leaving a profit of £11,040. Including £8,070 brought forward, there is a disposable sum of £19,110. A dividend of 4 per cent., less tax, is recommended, carrying forward £8,630.

Yorkshire (Woollen District) Tramways.—The report of the Yorkshire (Woollen District) Electric Tramways, Ltd., for 1917, states that revenue amounted to £84,585, against £76,140 for 1916. After deducting all expenses chargeable to revenue, including repairs and maintenance, payments to local authorities under agreements, debenture and other interest, and setting aside £10,600 to renewals fund there remains £19,258; £3,487 was brought forward, making £22,745. The directors recommend a dividend at the rate of 6 per cent. per annum on the ordinary shares, to place to reserve fund £5,614, and to carry forward £5,129.

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Another Record in Glasgow.—The takings for the week ended June 8 of the Glasgow Corporation tramways, which amounted to £31,255 4s. formed another record, exceeding by £166 the record made in the previous week. For the corresponding week last year the revenue was £26,922 11s. 11d. The number of passengers carried for the week ended June 8 was 9,300,250.

Prospective Estimated Loss at Belfast.—At the June meeting of the Belfast Corporation, it was stated that there will be an ultimate deficiency of £56,500 in the current year's working of the Corporation tramways. In view of the position, a recommendation was made by the Tramways Committee to increase the fares to the maximum of one penny per mile for ordinary passengers, and a halfpenny for workmen.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended June 12, amounted to £65,293, an increase of £7,070 as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to June 12 (ten and a half weeks), the total receipts were £635,622, an increase of £65,744 on the corresponding period of 1917.

Colchester Corporation Tramways.—Mr. R. C. Bullough, tramways manager, in his annual report for the year ended March 31, 1918, states that the total revenue was £17,870, an increase of £1,936, and the highest earnings in the history of the undertaking. The gross profit on the year's working amounted to £4,909, which was sufficient to pay interest on capital, £1,788 allowances to the dependants of men on service, £162, and annual repayment of loan £2,789, leaving a net profit of £35 10s. There was an increase of £670 in traffic expenses and £572 in general repairs and maintenance, due to higher wages and extra cost of material.

Swansea Improvements and Tramways Co., Ltd.—The report for the year ended December 31, 1917, shows that the revenue for the year amounted to £79,753, an increase of £7,411. Of the available balance a sum of £3,000 will be placed to reserve; preference dividends absorb £2,598, and a dividend at the rate of 6 per cent. is recommended on the ordinary shares. An interim dividend at the rate of 5 per cent. was paid for the first half-year in October last. The ordinary dividend requires £7,800, and the balance of £2,654 is being carried forward. Mr. C. G. Tegetmeier, presiding at the annual meeting held on June 4, said that the business had been carried on under considerable difficulties. Scarcity of labour and materials had imposed a heavy strain on the management, which at the same time had to face increased demands for travelling facilities. This increase in traffic had, however, enabled them to meet the increased charges, and to maintain the dividend of 6 per cent. on the ordinary shares which they had paid for some years past. The total revenue for the year was £7,411 more than for the preceding year. The running expenses amounted to £28,752, an increase of £2,668, owing to the increased wages of their staff. The progressive movement in wages was still going on. In addition to the increase of £1 a week over pre-war wages, a fresh demand was being made for an increase of 12½ per cent. on the wages now paid. To meet this increase the ordinary fares had been slightly raised, but they were under a statutory obligation to carry workpeople at all hours of the day at a fare of a halfpenny per mile. Mr. David James, the general manager, deserved their warmest thanks.

Nottingham Corporation Tramways.—The following is a summary of the results for the year ended March 31, 1918, and for the three preceding years:—

Year ended March 31.	1918.	1917.	1916.	1915.
Total revenue	£238,867	£203,155	£195,392	£179,315
Working expenses	155,484	138,717	121,266	112,583
Profit on working	£83,383	£64,438	£74,126	£66,732
Interest	£16,639	£16,495	£16,452	£13,833
Sinking Fund	8,459	8,459	8,459	8,442
Repayment of loans	15,715	15,715	15,714	15,290
Nottingham Corporation Bill	—	—	—	502
Net profit	£42,570	£23,769	£33,501	£28,665
Contributions to rates	£16,000	£10,000	£20,350	£22,500
Reserve fund	26,570	13,769	13,151	6,165
Passengers carried	52,690,881	47,480,934	45,741,208	41,210,964
Fare per passenger	1·07d.	1·02d.	1·01d.	1·02d.
Car-mileage	3,776,275	3,766,411	3,885,322	3,789,857
Units per car-mile	1·79	1·70	1·64	1·53
Power cost per car mile	2·62d.	2·30d.	2·25d.	1·91d.
Receipts per car-mile	15·18d.	12·94d.	12·06d.	11·35d.
Expenses per car-mile	9·88d.	8·44d.	7·49d.	7·13d.
Ratio of expenses	65·09.	68·28	62·10	62·78
Total track mileage	44·25	44·25	44·25	44·25
Number of cars in stock	155	155	155	155

Motor Vehicles Required.—Swansea Health Committee propose to purchase two electric vehicles at an estimated cost of £1,228, for the collection of house refuse. The borough surveyor of Oswestry has been instructed to obtain information as to the substitution of motor vehicles for horses for scavenging, etc. A committee of Uxbridge Joint Hospital Board is recommending the purchase of a chassis with a body suitable for an ambulance. Tilbury Council are inviting tenders for a new motor fire engine. Particulars may be obtained from Mr. S. A. Hill-Willis, engineer and surveyor to the Council.

MOTOR OMNIBUS SERVICES.

In the House of Commons on Thursday, General Colvin asked the President of the Local Government Board whether, having regard to the damage done by motor omnibuses to roads in rural districts, the difficulty and expense of repairing them, and keeping them watered, he would consider the advisability, in war time, of public conveyances for which petrol is released being restricted to the actual needs required for the conveyance of the public and not being used for pleasure purposes?

Mr. Wardle: I have been asked by my right. hon. friend to answer this question. Motor omnibus services are restricted by the Motor Spirit (Consolidation) and Gas Restriction Order, 1918, to routes upon which omnibuses were accustomed to ply during December, 1917, or to routes certified by the police to be necessary or desirable in the interests of the travelling public. Services which were running in the month of December are not likely to be pleasure services, and it would be difficult to differentiate between the passengers on these routes in order to eliminate unnecessary use. The possibility for the necessity of exercising further control has not, however, been lost sight of.

LIGHT RAILWAY COMMISSION.

In a statement circulated by Mr. Bonar Law on Thursday it was announced that the Board of Trade, after careful consideration of the recommendation of the Committee on Retrenchment that the Light Railway Commission should be wound up, had decided, after consultation with the Treasury, to continue the powers of the Commission for the present. The Light Railways Act of 1912 was accordingly included in the Expiring Laws Continuance Act last Session. This had been done in view of the difficulty under existing circumstances of forming an opinion as to the best method of dealing in the future with the question of light railways. A small staff of the Commission which remains is employed to a considerable extent on important duties in other departments of the Board of Trade.

Messrs. Johnson & Phillips, of Charlton, London, S.E.7, have issued a pamphlet containing a general description and complete specification of their all-steel, draw-out truck type switchboard. In this type of switchboard the switches and other apparatus are mounted on a removable truck so arranged that when the truck is in the working position all live metal is entirely enclosed behind a sheet steel front. The act of withdrawing the truck automatically makes the parts mounted on it dead and safe of access, at the same time screening the fixed contacts which remain alive. This type of enclosed switchgear has been designed not only for use in generating stations and sub-stations but also for service in works and other places where skilled supervision is strictly limited.

Salford Corporation have accepted the tender of the British Westinghouse Electric and Manufacturing Company for four 1,666 k.v.a. transformers at £5,460.

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Copies can be obtained from THE TRAMWAY AND RAILWAY WORLD Offices, Amberley House, Norfolk Street, W.C.

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

DIVIDENDS PREV.	DIVIDENDS LAST.	NAME.	PAID.	PRICE, JULY 27, 1914.	CASH June 13 or previous.	A WEEK AGO.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	67½	67½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅞	58/9	60/-
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4¼	48/9	48/9
4%	4%	Do. 4% Deb.	100	91	72	72
4½%	4½%	Do. 4½% Deb.	100	98½	66⅛	66⅛
5%	5%	Do. 5% Deb.	100	96	63⅛	63
—	—	Associated Omnibus Co., Ord. ..	5/-		1/2	1/2
1/-	6d.	Auckland Elec. Trams. Ord. ..	1	1 3/32	20/4½	20/4½
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	110½	110½
—	1/-	Bath Electric Trams Pref. Ord.	1	¼	3/6	3/6
6d.	6d.	Do. 5% Cum. Pref. ..	1	3/32	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	72½	72½
20/-*	28/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Do. 6% Cum. Pref. ..	10	11⅜	9 5/16	9 5/16
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87⅜	87⅜
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	41	41⅛
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	86⅞	86⅞
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5⅜	5⅜
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/6	78/9
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91	91
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	35	35
6%	5%	Do. Pref. Ord.	100	106	45	42½
5%	5%	Do. 5% Cum. Pref. ..	100	103	62½	61
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	83⅛	83¼
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	62	62⅛
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	32	32
6%	6%	Do. 6% Cum. Part. Pref.	100	—	74⅜	74
5%	5%	Do. 5% Deb.	100	92	76	77⅞
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	63⅛	63⅛
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	77⅛	77⅛
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	£7/0/6	6⅞
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	80/-	7s/0¾
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	73½	73½
1/-*	1/-*	Cape Elec. Trams.	1	1 1/16	13/-	12/9
1/3	1/3	City of B. A. Trams	5	5½	80/7½	82/-
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	83	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	80½	80½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	57⅛	57⅛
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 3/32	7 3/32
6/-	6/-	Do. 6% Pref.	10	12	10 3/16	10 3/16
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/3	1/3
1/23*	1/23*	Do. 6% Cum. Pref. ..	1	1/16	10/3	10/3
4½%	4½%	Do. 4% Deb.	100	67½	53	53
5½d.	8½d.	Hong Kong Tramway	5/-	5/16	19/6	19/6
5%	5%	Do. 5% Deb.	100	87½	76½	76½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44⅜	44⅜
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74⅜	74⅞
—	—	La Plata Trams. Ord.	1	⅜	2/4½	2/4½
6/6	9/6	Lanarkshire Trams Co. ..	10	10½	10 1/16	10 1/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	69⅜	69
9¾d.*	7¾d.*	Llandudno & Colwyn B. Ord. ..	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	3/32	1/9	2/4½
6d.	6d.	Do. 5% Pref.	1	1/16	7/3	6/10½
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	59	60
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	82	82
5%	5%	Do. 5% Inc. Deb.	100	88½	76	76
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	37½	36½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	82/6	82/6
5%	5%	Do. 5% Deb.	100	100	84½	84½
7½d.%	9½d.*	Manaos Trams & Ltg. Ord. ..	1	3/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	68	68
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	74½	74½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	69	69
5%	5%	Do. 5% Deb.	100	87	76½	76½
$1½	$1½	Mexico Trams. Common ..	$100	70	28	28
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	36	36
—	—	Do. 6% Mt. Bds. ..	100	76	30½	30
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	93½	93½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	91	91
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2½*	National Steam Car	1	3/32	16/-	17/-
½d.*	9¾d.*	New General Traction	1	1/16	7/1½	7/1½
6d.	8¾d.	Northern Gen. Trans. Ord. ..	1	⅛	12/9½	12/9½
3/-	4/-	Para Elec. Rlys. Ord.	1	3/32	83/9	81/10½
5%	5%	Do. 5% 1st Deb.	5	4½	72	74⅜
—	—	Pernambuco Tram. & Power Ord	100	89½	7/9	8/3
—	—	Do. 7% Non. Cm. Part Pf.	1	—	14/3	14/3
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
8¾d.*	8¾d.*	Potteries Elec. Trac. Ord. ..	1	1/16	7/10½	6/9
6d.	6d.	Do. 5% Pref.	1	1/16	12/6	12/6
1/4	8d.	Provincial Trams. Ord. ..	1	3/32	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	⅛	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	5½	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	88	88½	89
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	97½	74⅜	74⅜
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	89½	86	86
5%	5%	Do. 5% Perp. Deb. ..	100	99½	70	70
10/-	15/-	Shanghai Elec. Cons.	10	13	14⅜	14⅜
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/6½	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	92	94
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	78	78
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	35/-	35/-
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	57	57
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅜	23/3	23/3
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅜	85/-	84/7½
4%	4½%	Do. 4½% 1st Deb.	100	85½	72⅜	72⅜
—	—	Metropolitan Dist. Ord. ..	100	21¾	16⅜	15⅞
—	—	Undgd. Elec. Rys. of London ..	10	21⅜	35/6	34/9
—	—	Do. "A"	1/-	⅜	4/9	4/9
4½%	4½%	Do. 4½% Bds. of 1933 Rd. ..	—	99	104⅞	104⅞
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	98	99½
6%	6%	Do. 6% In. Bonds Rd. ..	—	88⅛	76⅜	76⅜

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AN OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C. ..	June 4	453	569	+ 116	9	4,857	..
Aberdeen Corporation ..	„ 5	1,821	2,187	+ 366	1	2,187	+ 366
Ayr Corporation ..	„ 8	421	611	+ 190	3	1,934	+ 532
Belfast City	„ 7	6,318	8,160	+ 1,842	10	77,227	+ 18 257
Birkenhead Corporation ..	„ 8	1,884	2,163	+ 279	10	21,122	+ 4,032
Blackburn	„ 5	1,403	1,981	+ 578	10½	19,154	+ 4,221
Bradford Corporation ..	„ 8	7,321	9,894	+ 2,573	10	81,301	+ 7,474
Burnley Corporation ..	„ 8	1,789	2,197	+ 408	..	..	..
Burton-on-Trent Cor. ..	„ 9	293	391	+ 98	10	3,973	+ 1,186
Bury Corporation ..	„ 9	2,057	2,029	— 28	10	20,133	+ 3,551
Chatham & District ..	May 30	1,770	1,321	— 449	22	25,859	+ 259
Cork Electric	„ 30	623	736	+ 113	22	12,857	+ 2,284
Derby Corporation ..	June 8	1,191	1,515	+ 324	10	14,824	+ 3,434
Dundee City	„ 5	1,512	1,999	+ 487	3	5,904	+ 1,430
East Ham Corporation ..	„ 8	1,437	1,535	+ 98	9½	13,999	+ 1
Glasgow Corporation ..	„ 8	26,923	31,255	+ 4,332	14	38,083	+ 7,589
Glossop (U.E. Sup. Co.) ..	„ 8	170	194	+ 24	23	4,221	+ 1,091
Halifax Corporation ..	„ 4	2,471	2,933	+ 462	9½	25,956	+ 3,507
do. Motor Buses ..	„ 4	41	64	+ 23	9½	570	+ 148
Huddersfield Corporation ..	„ 8	3,142	3,834	+ 692	10	37,766	+ 4,057
Ilford U.D. Council ..	„ 8	783	1,108	+ 325	10	9,792	+ 2,501
Ipswich Corporation ..	„ 8	711	755	+ 44	10	7,228	+ 1,535
Isle of Thanet	„ 8	354	310	— 44	36	7,123	— 2,410
Kilmarnock Corporation ..	„ 8	181	232	+ 51	3½	828	+ 188
Lanarkshire	May 30	2,923	3,710	+ 787	22	72,292	+ 17,626
Lancashire United ..	June 5	3,431	3,149	— 282	23	63,032	+ 17,792
Leeds City	„ 8	10,642	12,300	+ 1,658	10	118,797	+ 14,032
Leicester Corporation ..	„ 8	3,623	4,742	+ 1,119	..	..	..
Leyton U.D. Council ..	„ 6	1,959	2,297	+ 338	10	20,613	+ 1,652
Liverpool Corporation ..	„ 8	16,065	19,445	+ 3,380	22½	394,227	+ 62,591
Llandudno & Colwyn Bay	„ 7	3*8	450	+ 67	27	8,236	+ 2,156
London County Council ..	„ 12	58,223	65,293	+ 7,070	10½	635,622	+ 65,744
Maidstone Corporation ..	„ 6	250	287	+ 37	9½	2,751	+ 482
Manchester Corporation ..	„ 8	21,298	26,581	+ 5.283	10	252,773	+ 51,732
Newcastle-on-Tyne Cor. ..	„ 8	7,692	9,429	+ 1,737	16	89,655	+ 16,842
New St. Helens & Dist. ..	„ 5	1,702	1,932	+ 230	49	71,174	+ 16,740
Northampton Cor.	„ 7	788	835	+ 47	10	8,801	+ 1,106
Nottingham Corporation ..	„ 6	4,172	6,081	+ 1,909	10	55,192	+ 14,690
Oldham Corporation ..	„ 9	3,396	3,420	+ 24	11	38,164	+ 7,691
Reading Corporation ..	May 30	1,198	1,302	+ 104	9	10,755	..
Rhondda Tramways ..	„ 30	2,280	1,882	— 398	22	36,349	+ 5,984
Rotherham Corporation	June 12	1,718	2,063	+ 345	10½	22,215	+ 4,026
Sheffield Corporation ..	„ 9	11,753	13,589	+ 1,836	10½	146,871	+ 21,580
Southampton Cor. ..	„ 5	2,008	2,582	+ 573	9½	23,605	+ 6,147
Southend-on-Sea Cor. ..	„ 5	1,058	1,147	+ 89	10	8,699	+ 412
South Shields Cor. ..	May 18	879	1,116	+ 237	7	7,359	+ 1,558
Sunderland Corporation ..	June 8	1,785	2,031	+ 246	10	21,031	+ 3,787
Sunderland District ..	May 8	669	870	+ 201	27	23,094	+ 6,045
Swindon Corporation	June 5	273	285	+ 12	9½	2,829	+ 595
Torquay Tramways ..	May 30	781	917	+ 136	22	16,114	+ 5,176
Tyneside Trys. & Trmrds.	„ 29	1,404	1,119	— 285	22	20,029	+ 5,070
Wallasey Corporation	June 8	1,547	2,005	+ 458	9½	17,762	+ 3,611
Walsall Corporation ..	„ 8	875	1,200	+ 325	10	12,185	+ 2,892
Walthamstow U.D. Coun.	„ 8	1,350	1,701	+ 351	10	14,356	+ 2,174
Warrington Corporation ..	„ 6	533	742	+ 209	10	7,126	+ 2,258
West Ham Corporation ..	„ 6	3,821	4,528	+ 708	9½	40,107	+ 4,268
Wigan Corporation ..	„ 6	1,881	2,236	+ 355	10	18,258	+ 5,087

TRAFFIC RETURNS SUSPENDED.

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Birmingham, Blackpool, Blackpool and Fleetwood, Bolton, Bournemouth, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Dublin United, Exeter, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Nelson, Newport (Mon.), Portsmouth, Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation, Yorkshire (West Riding).

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	June 10	£54,115	£56,754	23	£1,274,678	+ £87,974
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Feb. 24	3,196	3,902	48	40,644	+ 1,316
Brazilian Traction (Mlrs.)	Apr.	7,453,000	8,330,000	17	31,576,000	+ 2,436,000
Brisbane	Apr.	31,620	35,530	17	137,569	+ 9,789
British Columbia .. $	Apr.	447,429	515,417	43	5,010,688	+ 496,254
Buenos Aires Lacroze ..	May	40,595	41,315	48	429,380	+ 3,322
Burmah Tram. & Light Rs.	Apr.	23,660	27,614	39	239,756	+ 4,945
Calcutta .. .. Rs.	June 8	64,508	72,232	23	1,641,101	+ 115,039
Cape Town	Apr.	16,705	19,011	..	..	..
Carthagena and Herrerias	May	4,321	5,027	21	22,585	+ 3,738
Cordoba	Feb.	11,896	12,972	47	147,938	+ 435
East India	May	1,455	1,920	43	14,207	— 4,933
Hong Kong .. .. $	Apr. 6	13,142	13,111	14	191,668	+ 2,605
Kalgoorlie	Jan.	2,431	2,522	4	2,522	+ 91
La Plata	May	4,127	5,105	21	25,078	+ 3,786
Lima	Apr.	37,834	43,557	17	171,112	+ 24,623
Lisbon .. .. Escu	Oct.	203,955	249,406	..	..	..
Madras (2 weeks) Rs.	May 31	33,405	41,152	21	403,879	+ 60,107
Manaos .. .. Rs.	Feb.	144,532	133,591	8	285,462	+ 5,563
Manila (8 weeks) .. $	Feb. 28	73,200	93,000	8	93,000	+ 19,800
Montevideo	May	28,716	32,301	26	238,338	+ 23,000
Pernambuco	May 26	3,589	4,300	21	95,69	+ 20,196
Peruvian .. .. $	May	902,780	1,022,120	48	11,424,560	+ 1,261,888
Port Elizabeth	Apr.	3,904	4,028	..	..	..
Rangoon	May	4,737	5,719	21	28,582	+ 3,345
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	Apr. 13	13,131	14,260	15	202,259	+ 2,871
Toronto .. .. $	Apr.	970,367	1,065,766	17	4,229,490	+ 332.895
Winnipeg .. . $	Apr.	265 594	296,433	17	1,237,263	+ 77,913

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TRAMWAY TRACK CONSTRUCTION AND MAINTENANCE.

By R. BICKERSTAFFE HOLT,

Highways and Permanent Way Engineer, City of Leeds

CONTENTS:

FOREWORD.
What's wrong with the Track?"

CHAPTER I.—CONCRETE FOUNDATIONS.
Defects—Causes of fracture—Method of laying concrete.

CHAPTER II.—CONCRETE MATERIALS.
Road metal—Water-gravel—Sand—Clinker-sand—Trass

CHAPTER III.—REPAIRS TO CONCRETE FOUNDATIONS.
Patching—Partial repairs—Complete renewal.

CHAPTER IV.—TRACK DESIGN.
"Follow my leader" policy—Importance of local conditions—Effect on sub-soil—Standard methods—Transverse sleeper tracks—Effect of vehicular traffic and tramway car traffic.

CHAPTER V.—RAIL PACKING.
Pitch and tar packing—Materials—Testing and preparation of materials—Prepared tar—Pitch mixtures—Movement of rails—Packing and floating.

CHAPTER VI.—RAIL LAYING.
Bad rail packing—Rails canted or twisted—Anchoring and Padding—Rail expansion and contraction—Curving of rails—Springing of rails—Anchoring tracks.

CHAPTER VII.—JOINTS, FISH PLATES, BOLTS AND NUTS
Why joints fail—Dished or hammered joints—Movement at joints.

CHAPTER VIII.—JOINT WELDING.
Methods of welding—Thermit welding—Electric arc welding process—Expansion and contraction—Oxy-acetylene process.

CHAPTER IX.—RAIL WEAR.
At joints—On new tracks—On steep gradients—On wheel tires—Contact of wheel and tire—Leeds special rail section—Railway rails—Depression of check.

CHAPTER X.—COMPOSITION AND MANUFACTURE OF TRAMWAY RAILS AND RAIL WEAR.
Defective rails—Composition of rails—Standard specification—Basic and acid Bessemer process—Sandberg process—Analysis of rails and rail tests—Drop test unnecessary.

CHAPTER XI.—CORROSION OF TRAMWAY RAILS.
Causes of rail corrosion—Exposure to sea water—Effect of corrosive liquid.

CHAPTER XII.—TRACK PAVING.
Effect of vehicular traffic—Cause of loose rails—Importance of quality in setts—Square-dressed setts—Nidged granite setts—Bonawe granite setts—Wood paving—Bedding of setts—Laying and ramming

CHAPTER XIII—RECONSTRUCTION
Removal of tracks—Temporary tracks.

CHAPTER XIV—SURFACE DRAINAGE AND RAIL MAINTENANCE.
Rail cleaning—Rail grinding—Rail planing.

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THE

Tramway & Railway World

Vol. XLIII. No. 31] LONDON, SATURDAY, JUNE 22, 1918. [Established in 1892.

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WEEKLY LIST OF TENDERS INVITED.

BOROUGH OF RICHMOND (SURREY).

To Steam Motor Wagon Engineers.

The Council are prepared to receive Tenders for the supply of a 3- to 4-ton Steam Motor Tipping Wagon, fitted with interchangeable body—i.e., wagon body having a capacity of about 5½ cubic yards and a watering tank with a capacity of about 650 gallons.

Further particulars may be obtained on application to Mr. J. H. Brierley, Borough Surveyor, Town Hall, Richmond, Surrey.

The Council do not bind themselves to accept the lowest or any Tender.

Sealed Tenders, properly endorsed, to be sent to the undersigned on or before Thursday, the 27th inst.

HENRY SAGAR,
Town Clerk.

Town Hall, Richmond, Surrey.
11th June, 1918.

POSITIONS VACANT.

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Electricity Department.

The Rawtenstall Corporation invite applications for the following:

Shift Engineer.—Wages 60s. per week, plus 12½ per cent Applicants should have had experience in high tension, three-phase and direct current three-wire system, and should have also had a good mechanical training.

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C. L. E. STEWART, A.M.I.E.E.
Borough Electrical and Tramways Engineer.

Bacup Road, Rawtenstall,
June 18th, 1918.

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H. G. STEAVENSON,
Town Clerk.

Darlington, June 17, 1918.

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Traffic Superintendent required. Must be used to controlling traffic, compiling time-tables, arranging running shifts and carrying out all duties in connection with traffic. Preference given to those who have held a similar position. State wages required.

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SATURDAY, JUNE 22, 1918.

HOUSING AND TRAMWAY EXTENSION.

THE encouraging and inspiring address that the President of the Local Government Board delivered to the Association of Municipal and County Engineers on Thursday was by no means without importance to those interested in transportation. Mr. Hayes Fisher takes an optimistic view of the conditions that will prevail in this country after the war, and his hopefulness is based upon the reasonable expectation that the Allies will hold the keys of the sources of raw materials, and that they will distribute these materials first of all to those nations that have striven to preserve the peace and liberty of the world. If these be the conditions, then there can be little fear that this country will not in a few years overtake the tasks of reconstruction. Of all these tasks the one which must engage attention among the very first is the provision of proper dwellings for the people. In this work one of the most important, if not the most important, consideration is, as Mr. Hayes Fisher said, that of transport. No housing or town planning scheme can be drawn up without provision for carrying the people to and from their work, and the extent of the transport that must be provided may be surmised from the magnitude of the plans that the Local Government Board are arranging. These plans include the construction of 300,000 dwellings under conditions that make extensive transportation facilities imperative. There are to be not more than twelve houses to the acre, a stipulation that will give the workers better accommodation than they have ever enjoyed. It is not expected that it will be possible to let these houses at an economic rent for some years after the war, and the loss is to be shared between the Government and the local authorities, the former bearing three-fourths of the loss. The houses are to be designed on the supposition that the occupiers will when peace is re-established, earn substantial wages, and this implies that they will be able to pay the cost of convenient transport to and from their homes. This will mean a greater demand for tramways and motor transport than was dreamed of before the war. The hampering effect of local boundaries will be largely removed, because it is now generally recognised that transport must be planned for the benefit of the people and not for the benefit of the local authority or its immediate constituency. The bane of tramways in this country—their low speed—will in the new schemes be greatly modified by the provision of wider roads providing space that will be used exclusively for tramway tracks. There are already examples of such newly-built roads at Liverpool and elsewhere, and they are only the forerunners of many such schemes. Thus, aside from the immense amount of tramway reconstruction that must be entered upon at the earliest possible moment, there will be a large number of new lines to be built just as soon as materials can be obtained. Government will concern itself with the provision of materials for new dwellings, and as these will be useless without travelling facilities, it seems clear that official help will be forthcoming for those who will undertake the provision of the latter. Housing and transport should consequently advance at an equal pace. There are thus prospects of great activity for contractors for tramways and for the manufacturers of tramway equipment and of public service vehicles. Electric traction has not been made to serve the public in this country to anything like the extent which it has done in America, but it will be surprising, now that the immense importance of local transport is better understood, if electric tramway mileage in this country is not after the war developed to meet the needs of the public.

CONDUCTORS' SLACKNESS.

By A CORRESPONDENT.

Since the appearance of the woman conductor, complaints of inattention and slackness have undoubtedly grown more numerous. In the words of an editorial writer of a northern newspaper, "there seems to be, by general consensus of opinion, a curious habit of not looking for passengers outside a five-yard radius of the posts that mark the stopping-places." The writer concludes his complaint with the witty remark that "no conductor need fear the fate of Lot's wife if she takes a backward glance." In London this failing on the part of women conductors appears to be intentional. One conductor recently remarked in reply to an expostulation that she was supposed to give attention only to such persons as were standing at the stopping-places. Such shortsighted conception of duty is to be deprecated wherever it exists ; but in the case of a tramway undertaking that is subject to omnibus competition it is fatal to successful working. It is not a question of delaying cars by waiting for persons a hundred yards away. The complaints come from people who are hurrying from the rear or from a side street which a car has passed before stopping, and who when perhaps a few yards distant see the car started without the conductor attempting to look around.

At the present time this matter is of greater importance than ever before to tramway authorities because reductions in services are being effected. Employees should not forget that passengers are being called upon to pay increased fares on account of the employees' demands for higher wages. That the unions do not attempt to take up this question with their members denotes a poor conception of the rôle that such organisations should play. It is reasonable to credit the unions with a desire to secure the improved relations that are hoped for with employers as the result of the setting up of industrial councils upon the basis of the Whitley report. On the unions' own showing these councils are likely to be of great advantage to them, especially in the direction of compulsory membership. It was upon this point that several recent strikes of tramway employees occurred. Under the Whitley scheme that will cease to be a bone of contention, for the labour half of a council will be fully representative of the employees. Trade unions should, therefore, be reorganised on the lines of the old time guilds, thus guaranteeing that their members are capable. A preliminary step should be the abolition of what at present appears to be a qualification for membership of a union—namely, the determination to do the minimum amount of work. A tramway worker, especally a conductor, is of little use unless he or she exhibits a whole-hearted sense of duty.

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GLASGOW CORPORATION TRAMWAYS.

In the financial year ended May 31, 1918, the Glasgow tramways have again broken all records. As will be seen from the comparative abstract appended, the surplus to be handed over to the common good, which is the sum remaining after the payment of all charges and reserves, and may be regarded as the net profit, amounted to no less then £177,552, as compared with £160,984 in the previous year. This notable result has been obtained in spite of the fact that there are increases in all items of expenditure, amounting to £206,118. The traffic receipts shows the very large expansion of £158,603.

Year ended May 31.	1918.	1917.	1916.	1915.	1914.
Traffic receipts	£1,404,110	£1,245,507	£1,149,264	£1,070,694	£1,078,691
Sundry receipts	8,525	14,607	8,072	6,183	5,156
Total revenue	1,414,635	1,260,114	1,157,336	1,076,877	1,083,847
Traffic expenses	527,152	395,736	350,186	345,625	332,546
General expenses	156,949	137,816	144,297	142,020	134,034
Maintenance and repairs ..	179,811	143,758	133,659	144,530	156,214
Power expenses	86,019	67,231	64,346	51,995	53,483
Clydebank bridges	1,132	879	516	—	—
	951,063	745,420	693,004	684,170	676,277
European War	93,120	92,645	80,438	51,817	—
Total Expenditure ..	1,044,183	838,065	773,442	735,987	67. ,277
To net revenue account ..	368,452	422,049	383,894	340,890	407,570
Dumbarton tramways ..	—	—	—	126	180
Interests on investments ..	8,580	78,637	81,203	65,701	64,809
Total	377,032	500,686	465,097	406,717	472 559
Deductions .. .. —					
Rent of Paisley lines ..	11,119	8,153	6 700	5,559	5,830
Interest on capital ..	—	78,846	90,474	78,797	82,921
Sinking fund	—	114,378	109,614	105,493	102,607
Income-tax	64,405	64,622	59,853	22,789	14,057
Parliamentary expenses	61	98	500	8,818	609
Renewal and depreciation	123,894	73,305	174,408	172,310	212,642
Total	199,479	339,702	421,549	393,766	418,026
Surplus to common good ..	177,552	160,984	43,548	12,951	53 893

The following are the traffic statistics :—

	Total.	Increase.
Track mileage single open	196¼	—
Car mileage	26,261,231	475,184
Traffic receipts.. ..	£1,404,110 4s. 8d.	£158,602 5s. 6d.
Traffic receipts per car mile	12·832d.	1·240d.
Traffic receipts per passenger	·782d.	·013d.
Passengers carried	430,946,566	42,651,690
Passengers carried per car mile ..	16·409	1·350

The following statement gives the number of passengers carried at each fare :—

	Year to May 31, 1918.	Year to May 31, 1917.
½d. ..	272,902,138 ..	247,971,348
1d. ..	110,608,645 ..	100,118,754
1½d. ..	28,462,112 ..	24,970,118
2d. ..	9,332,956 ..	7,839,444
2½d. ..	4,351,666 ..	3,540,215
3d. ..	2,215,506 ..	1,720,316
3½d. ..	2,696,504 ..	1,879,053
4d. ..	377,039 ..	255,628
	430,946,566	388,294,876

Since July 1, 1894, to May 31, 1918, the totals are as under :—Passengers carried, 5,236,560,507 ; miles run, 413,053,528 ; car traffic revenue, £18,710,101 16s. 2d. ; weight of copper received during year to May 31, 1918, 826 tons.

EXTRA OMNIBUS SERVICES WITHDRAWN.

In the House of Commons on Monday, Mr. Gilbert asked the President of the Board of Trade whether he could make any statement as to the action he had taken as regards the running of extra omnibuses in the Ilford district, while the municipal tramway services have been curtailed at the request of the Board of Trade Tramway Committee ; whether he proposed to stop this extra consumption of petrol by the omnibus company ; and whether he was aware that the Croydon Corporation had reduced the tramway services in their district at the instance of the Tramway Committee set up by his Department in order to save coal, etc., and that the motor omnibus company had at once put on extra services of fifteen omnibuses on weekdays and fourteen on Sundays in the Croydon district ; and whether he could take any steps to stop this competition with municipal services, and the extra consumption of petrol involved in these extra omnibus services ?

Sir A. Stanley : The extra omnibuses referred to are part of the regular services of the omnibus company which are run during the summer months only, but, in view of the need to economise in the consumption of petrol the omnibus company has been requested to withdraw these omnibuses.

UNAUTHORISED STRIKE AT WIGAN.

Shortly after noon on Saturday last, the Wigan Corporation tramway employees began a strike in direct conflict with the advice of the responsible officials of their union, and a general stoppage of traffic ensued with great inconvenience to the public, including thousands of miners and cotton operatives who were just leaving work. The cause of the strike was the refusal by the Tramways Committee to grant permission to six inspectors and a cash clerk to join the Tramway Workers' Union. On the previous evening the Tramways Committee had offered to submit the matter in dispute to arbitration, but on Saturday morning the men balloted on the question of a strike. The majority favoured the cessation of work, and ran their cars into the depot shortly after noon, ignoring a telegram from their union headquarters instructing them not to withdraw their labour.

On Tuesday the strikers returned to work, leaving Sir George Askwith to decide the question in dispute. This was the second occasion during the war that the Wigan tramway employees had struck work against the counsel of their union officials. The loss to the Corporation through the strike is stated to be about £600.

AIMS OF TRAMWAY UNIONS.

In the course of a letter published in the *Liverpool Daily Courier* signed by both the permanent secretary and the president of the Liverpool branch, of the Tramway and Vehicle Workers' Union, the writers state that the national aims of their members are as follows :—

(1) The entire tramway systems of the United Kingdom to work together as one, with the Trades Union Congress and the National Transport Workers' Federation (which we are affiliated to).

(2) That we aim at achieving a standardised rate of wages for all grades of labour catered for by our union.

(3) That 48 hours per week of six days be the recognised working week.

(4) A recognised 14 days annual holiday, with pay, after twelve months' service.

(5) Suspension of Christmas Day service in England, New Year's Day in Scotland.

(6) That we seek to abolish all long spreadover duties.

(7) That all cars be fitted with vestibule fronts.

CORRESPONDENCE.

WOMEN DRIVERS AND THE COMMISSIONER OF POLICE.

To the Editor of the TRAMWAY AND RAILWAY WORLD.

SIR,—Adverting to the paragraph in your last issue, headed "Protest Against Women Drivers," I beg to say that no difficulty whatever has arisen, so far, between our out-door staff and the Department, with regard to the employment of women drivers.

Some correspondence has appeared in the local press, in which wild statements have been made as to the number of discharged soldiers who have unsuccessfully applied for work here as motormen. The fact is, however, that practically every ex-service man who has offered himself for employment during the past two years has been given a start, but, unfortunately, about 50 per cent. of those resigned of their own accord, having found the work too strenuous for them.

I received a letter, dated the 7th of May last, from the Commissioner of Police, stating that he was prepared to licence women drivers, and I at once started to train certain selected women for this purpose. Seven of these have gone through a complete course of training, and have applied for licences, but up to the present none has been issued, and no satisfactory statement can be got from Scotland Yard with regard to the matter.

Some of these women gave up situations elsewhere, in order to come here. The result is that they are now standing idle, waiting for their licences, while we are unable to cope with the traffic, through a shortage of drivers. One or two of them are widows with children dependent upon them, and I think it is scandalous that they should be treated in this way.—Yours faithfully,

WILLIAM MURRAY,
Tramways Manager.

Tramways Offices, Walthamstow,
June 19, 1918.

MR. HARRISON BARROW.

To the Editor of the TRAMWAY AND RAILWAY WORLD.

SIR,—May I make a correction in regard to your notice (page 350) of the conviction of Mr. Harrison Barrow for an offence under the "D.O.R.A." The Alderman, presiding at the Guildhall, agreed that the statement of authorship on the leaflet was sufficient. It was therefore only for carrying out the refusal of the Society of Friends to submit to the censor the publications, which it thinks it right to issue, that Mr. Barrow was convicted.—I am, Yours truly,

JOSEPH STURGE.

318, Hagley Road, Birmingham,
June 19, 1918.

Warning to Passengers Avoiding Payment of Fares.—Liverpool Tramways Committee have caused to be posted in the tramway cars special notices conveying a warning that persons who are detected alighting from the cars without having paid their fares will be prosecuted.

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INCREASED FARES.

On the recommendation of the Electricity and Tramways Committee, Sheffield Town Council has decided in view of the increased cost of labour, materials, etc., to increase the fares on all routes in accordance with the new scale prepared by the tramway manager. This will increase the present 1d. fares to 1½d. between the different stages, 1½d. fares to 2d., and 2d. fares to 2½d. Workmen's half-penny fares at certain hours of the day will not be affected.

The result of the first week of the increased fares at Leeds has been such as fully to justify the Tramways Committee in the course adopted. A higher revenue has been secured, while the number of passengers has decreased. The fares have realised an average increase per day of approximately £250, while the passengers have decreased from 10 to 12½ per cent. The gross takings for the week amounted to £13,293, an increase of £1,719 over the corresponding week last year. The reduction in workmen's fares (for instance the 2d. fare has become 1½d.) has been a great advantage to the traffic; the numbers have, in fact, almost doubled.

TABLES OF BRITISH DECIMAL COINAGE,

METRIC AND BRITISH WEIGHTS AND MEASURES.

Mr. A. J. Lawson, M.Inst. C.E., has compiled in this eminently useful and timely work conversion tables of practically every British unit of measurement into metric equivalents. The book is dedicated to the British-Italian Commercial Association and its chairman (Mr. R. Henson) contributes an introduction, explaining that the object of the book is to aid in the removal of obstacles that impede trade between Great Britain and Italy. The whole book is bi-lingual, English and Italian text being given on opposite pages. Tables for counting from the metric to the British system include matter of special technical and engineering interest, such as railway curves, tensile strength, etc., but the tables are intended for general use, and they will be found of the greatest service in business houses and offices where metric weights and measures have to be compared with British equivalents. The tables are worked out in great detail, and as the book is published at the low price of 5s. and includes tables for the conversion of English money into lire, it should become a popular guide. It is published by Eyre and Spottiswoode, Ltd.

MISCELLANEOUS NEWS AND NOTES.

London United Tramways Bill.—After three days' consideration, the House of Commons Select Committee passed the preamble of this bill.

Careful Women Drivers.—Dr. Waldo, the London City coroner, at an inquest on June 17 said, "I would rather see women drivers. They are very careful."

Restitution by a Conductor.—The borough treasurer of Plymouth at a recent meeting of the Tramways Committee acknowledged the receipt of £2 conscience money from a former conductor.

New Generating Station for Blackburn.—The electrical engineer of Blackburn urges the Corporation to make strong representations to the Government as to the importance of the erection of a new generating station.

Strike at Cardiff.—With the exception of the tramway workers, the municipal employees of Cardiff, numbering over five hundred, struck work on Saturday. Street lighting was interrupted, and other municipal services were at a standstill.

Position Not to be Coveted.—What with the demands of the male staff, the impossibility of procuring other than the absolutely essential materials for maintenance, and the equal impossibility of getting repair work executed, to say nothing of the immensely increased cost of working the tramways, the responsibility of the tramway committee is not to be coveted.—*Nottingham Guardian.*

Depreciation at Glasgow.—The sum that has been set aside for renewal and depreciation for the Glasgow tramways is £50,590 more than a year ago. The provision is at the rate of £400 per mile of single track; formerly the rate was only £200. It is intended to provide a reserve for the time when the whole track will require to be renewed. In the meantime owing to the great scarcity of materials, renewals have to be made only where absolutely necessary. No alteration in fares is proposed to be made, at any rate for the present.

Rotherham Corporation Bill.—Sir John Snell, in giving evidence in support of the bill of the Rotherham Corporation, said that he considered £45,000 a reasonable price for the purchase of the Mexborough and Swidton electric tramways undertaking. At least £15,000 would be obtained by the sale of plant which the Corporation would not require. Rotherham would be able to supply electricity at a much cheaper rate than the Tramway Company could possibly obtain it, and they might look for an immediate revenue of £31,000 a year.

From Bradford to Blackpool by Tramcar.—In reply to a correspondent who asked the best means of travelling from Bradford to Blackpool by tramway car, the *Bradford Daily Argus* gives the directions of a correspondent who made the journey. "Proceed to Hebden Bridge by car, then walk to Bacup via Todmorden. At Bacup take a car and ride to Accrington via Rawtenstall, where a change of cars must be made for Blackburn; proceed thence by train to Kirkham, and walk to Blackpool via Clifton and Marton. The correspondent arrived at Blackpool the same evening at 8 p.m. The cost in fares, including train and tramway was 5s.

Shortage of Motormen at Sheffield.—At a meeting of the Sheffield City Council on June 12, Alderman Fenton said that the employment of women as tramway car drivers was not anticipated at present, but he warned the Council and the public that the position with regard to motormen was becoming acute. Is was a matter of anxiety whether they would be able to continue the service efficiently if the depletion of men went on. The Tramways Committee were asking for auxiliary drivers, men to give twelve hours a week to assist in driving the cars. One member of the Council, Alderman G. Addy, was already doing work in that direction.

The Channel Tunnel.—Baron Emile d'Erlanger, chairman of the Channel Tunnel Company, presiding at the annual meeting on Monday, said that no more striking example of the British bull-dog tenacity in civil life had been given than by that small company of men who for some thirty years have made the construction of the Channel tunnel their battle cry, and who have succeeded in enlisting the majority of the nation and the very élite of its thinkers under their banner. This was no time for discouragement, and they must not swerve from their set purpose. Peace would rise upon this world again, and with it the day of the construction of the Channel tunnel would dawn.

Reduction in Stopping Places.—Mr. Councillor R. H. Swain, chairman of the Nottingham Tramways Committee, announced at the meeting of the City Council on June 14 that they had decided to abolish or alter 62 of the 1,221 stopping places, in order to economise in energy consumption. This had been done in response to a request by the Board of Trade, and the alterations had been drawn up by the general manager, Mr. J. Aldworth. Sheffield Tramways Committee propose to reduce the number of "stop by request" stations from 558 to 484. Sheffield is said to be running the highest number of cars compared with the total number of any large undertaking in the United Kingdom.

Sunday Services.—The Sunday morning services which were discontinued some weeks ago by the London County Council and the Metropolitan Electric Tramways Company, are now resumed at 10 a.m. The change has been made owing to numerous complaints of the inconvenience caused by the absence of a service on Sunday mornings. The Mayor of Bournemouth has stated that the discontinuance of the tramway service on Sundays will entail a loss to the town of £4,000 a year. Ilford Council has decided to discontinue Sunday morning services. The chairman of the Tramways Committee, Councillor Walters, has stated that the step was absolutely necessary. Ayr Corporation tramways have also discontinued Sunday services.

Edinburgh-Queensferry Tramways.—"It is all very well" says a writer in the *Scots Pictorial*, "to cry about the cost and to predict financial failure for the proposed Edinburgh-Queensferry tramways, but how on earth is the beautiful and convenient countryside near Edinburgh to be developed and rendered attractive as possible residential centres unless access to these spots be given? The great cry is town planning nowadays, and one of the impelling arguments for such planning is the congestion of cities. Elbow room is wanted, and tramways—better than anything else—will encourage emigration." The writer predicts that in ten years' time from the running of the first electric car to Queensferry, such places as Blackhall, Davidson's Mains and Barnton will become thriving suburban townships.

Opposition to Women Drivers.—Mr. W. J. McCombe, manager of Hull Corporation tramways, appealing at Hull Tribunal on June 14, on behalf of a tramway motorman, 42 years of age and in Grade 2, who held an exemption on domestic grounds, drew attention to an arrangement made with the Ministry of National Service by which the man was in a certified occupation. Mr. Rowan, secretary of the Tramway Employees' Union, asked that all tramway cases should be adjourned until the National Service representative received instructions from headquarters. Mr. Rowan said that his society was absolutely opposed to women drivers under any circumstances, and their district council had instructions to call meetings at once as soon as women drivers were appointed anywhere. Asked whether the object of the society was consideration of the safety of the public or a desire to keep the men on the cars, Mr. Rowan replied that it was to a great extent the protection of the public. He did not think the front platform of the car was the proper place for a woman.

PERSONAL.

Mr. G. Blake Walker, M.I.C.E., has received the honorary degree of master of engineering from Sheffield University.

Mr. John Moxon, chairman of Newport (Mon.) Tramways and Electricity Committee, has been appointed an O.B.E.

Mr. F. W. Mackinney, chief officer of stores of the London County Council, has been granted an increase in salary from £1,000 to £1,250.

Alderman Ellaway has been appointed chairman of the Birmingham Tramways Committee. He was an original member of the Committee and has served continuously since his appointment. For ten years he was chairman of the Electric Supply Committee. The Lord Mayor, Alderman Sir David Brooks, alluded to the valuable services rendered to the department by Mr. Harrison Barrow, who recently resigned his membership of the City Council, and on the motion of Alderman Ellaway, a resolution was approved expressing the Committee's regret at the circumstances which had led to the resignation by Mr. Barrow of the chairmanship of the Tramways Committee, a position he had held for ten years, and high appreciation of his valuable services.

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Plymouth Corporation Tramways.—Alderman T. Baker has been elected chairman of the Tramways Committee in succession to the late Alderman S. H. Phillips.

Lieut. T. F. Goldsmith, M.C., of the Manchester Regiment, has recently been awarded a bar to the Military Cross for gallantry and devotion to duty in action. He was formerly engaged as an assistant in the general management office of the Wallasey Corporation Tramways, and has been on active service since the commencement of the war. He joined the 3rd Liverpool Pals Regiment on their formation and was early promoted to the rank of corporal. After doing good service in the field he was wounded in action and invalided home about twelve months ago. On becoming convalescent he was granted a commission in the Manchester Regiment, and while serving in this corps the two honours of the M.C. and bar have been conferred on him. During the recent battles he was unfortunately badly "gassed," but is now making satisfactory progress towards recovery, and expects to be in the front line again within a short period.

Mr. Fred Coutts, who was one of the six candidates for the general managership of the Edinburgh Corporation tramways placed on a short list selected by the Committee for further consideration, has addressed the following letter to the town clerk of Edinburgh, withdrawing his candidature :—

"Would you be good enough to inform the Town Council that I wish to withdraw my application for the general managership of the Edinburgh Tramways ?

"What has led to my doing so is the fact that my directors, who have treated me in a most liberal way since I entered their service, have asked me in the National interests to remain here over what is perhaps the most critical time there has ever been in this country's history ; and as the output of shipbuilding and munitions in the district is, to a large extent, dependent on the tramway service, I feel it would ill become me to refuse a request to remain and give all the help in my power to keep up the full supply of munition workers' cars.

"Please convey to the Council my appreciation of their having put me on the short list—a fact which I only learned from the papers a few minutes ago.

"My regret is deep indeed, as for some years I have looked forward to the probable honour of some day managing the Edinburgh Tramways but, in these days, one must sink his own personal outlook to his country's needs."

FINANCIAL REPORTS AND MEETINGS.

J. G. White & Co., Ltd.—The report for the year ended February 28, 1918, states that net profit was £13,362 ; £41,679 was brought in, making £55,041. The directors recommend a dividend of 6 per cent., less tax, on the ordinary shares for the year, and to carry forward £43,041.

Plymouth Corporation Tramways.—The accounts for the year ended March 31 last show a gross profit of £33,230. After payment of capital charges and income-tax on profit there will be a net profit of £12,338, of which £4,300 will be transferred to the borough fund for the relief of the rates, and £8,038 placed to the reserve fund.

British Insulated and Helsby Cables.—An extraordinary meeting was held at Liverpool on Monday, when resolutions were confirmed for capitalising the undivided profits, in order that they might be distributed among the ordinary shareholders, and for increasing the capital to £1,500,000 by the creation of 500,000 ordinary shares of £1 each.

L.C.C. Traffic Receipts.—The traffic receipts for the week ended June 19, amounted to £64,533, an increase of £9,061 as compared with the corresponding period last year. The route mileage was 141·67, the same as a year ago. From April 1 (the commencement of the financial year) to June 19 (eleven and a half weeks), the total receipts were £700,166, an increase of £74,816 on the corresponding period of 1917.

Waygood-Otis, Ltd.—The report of Waygood-Otis, Ltd., for the year ended March 31, states that the profit, after providing for all expenses and depreciation, amounts to £22,281 ; £8,122 was brought in, making £30,403. Dividend on preference shares to July 15, 1916, absorbed £9,000, and there has been placed to reserve for depreciation of investments £2,000, to reserve account £2,000, leaving £17,403. The directors propose to pay on July 15 a twelve months' dividend on preference shares for year ended July 15, 1917, leaving £8,403 to be carried forward.

The Brush Electrical Engineering Co., Ltd.—Mr. Emile Garcke, chairman, presiding at the annual meeting on Monday, said that the year had been one of considerable activity in all departments of the company's works. Notwithstanding the difficulties of manufacture, owing to the shortage of labour and material, the output measured in money value constituted a record. There was an increasing demand for their standard products for war service, but on the rolling stock side their regular business had been practically at a standstill, all their resources in the wood-working shops having been devoted to another product in which they had been particularly successful. The demand for their Ljungstrom turbo-generator sets and accessories had increased so rapidly that a large extension of their machine tool equipment had to be arranged. The present high taxation of profits did not favour the increase of capital which would be so much required after the war. Mr. B. S. Broadhurst, managing director, seconded the motion for the adoption of the report, and a dividend at the rate of 6 per cent. per annum on the ordinary stock for years 1916 and 1917 was confirmed.

Bombay Electric Supply.—The report of the Bombay Electric Supply and Tramways Company for 1917 states that total revenue, including sale of current to tramways, was £439,850, increase £66,383. Expenditure was £183,457 ; increase £26,769 ; net receipts £256,393, increase £39,614. Deduct interest on debenture debt £33,822, depreciation £43,333, capital amortisation £16,340, balance of English excess profits tax for year 1915 assessed and paid in 1917 £2,634, provision for English excess profits tax for three months ended March 31, 1916, assessed by the London assessors £10,000 Indian super-tax £3,475 and annual contribution to provident fund £3,537, aggregate, £113,141. Balance of profit £143,251, plus £5,215 brought in, making £148,465. The directors recommend free from all income tax to holders domiciled in India, a dividend for the year on ordinary shares at 10 per cent., and bonus at 4 per cent. per annum, and bonus of one month's pay to officers and employees, carrying forward £6,768.

Potteries Electric Traction.—The report for 1917 states that revenue amounted to £176,745. Traffic and parcel receipts amounted to £160,060, an increase of £24,941. Expenses increased by £24,972 although many repairs and practically all renewals have had to be deferred. The sum of £2,516, representing the loss on the conversion into war stock of parliamentary deposits lodged in Consols and recently released, has been included in this figure. After deducting all expenses, including debenture interest and £10,000 for renewals, there remains £34,444, as compared with £33,152 ; £7,261 was brought forward, making £41,705. The directors recommend a dividend on the ordinary shares at the rate of 3½ per cent. per annum, to place to reserve account £12,500 and to carry forward £8,380. The reserve now amounts to £57,932 and renewals fund to £55,738. The tramway and omnibus services have been carried on with great difficulty. The period has now expired in which the Corporation of Stoke-on-Trent were entitled to give notice to purchase the tramways within the borough and their right to purchase the tramways and light railways does not arise again until 1924 and 1932 respectively.

Leeds City Tramways.—At a meeting of the Leeds Tramways Committee on Monday, Alderman R. A. Smithson presiding, the annual report and analysis of the operating expenditure and income for the year ended March 31, presented by Mr. J. B. Hamilton (general manager), were approved. The receipts amounted to £586,631, an increase of £70,824 over those of the previous year (£515,806). The earnings per car mile averaged 14.746d, as compared with 12·817d. for 1916-17. The working expenses amounted to £314,042, or 7·894d. per car mile, an increase on last year's total of £53,157. This was attributed mainly to increases in wages amounting to, approximately, £43,000, coupled with advances in the prices of materials used. The anuual cost of war bonuses paid to employees amounted to £90,000. Traffic expenses exceeded the previous year's figures by £28,037, of which £16,021 represented the increase in wages paid to motormen and conductors. Another increase of £3,543 under the heading of "ticket check" was owing very largely to the big rise in the price of paper. The fuel bill had increased approximately £1,200. Against the gross profit of £272,588 (£254,920 the previous year) there were the following charges : Interest on capital, less bank interest, £37,174 (£40,021) ; redemption fund, £64,899 (£62,222) ; income tax, £23,257 (£17,846) ; war service allowances, £12,053 (£12,890) ; general renewals, £59,694 (£30,000) ; and other lesser sums, leaving a net surplus of £214,588 (£175,489). Out of this the amount appropriated in relief of rates was £58,000, as against £79,431 in the previous year.

British Electric Traction —The report for the year ended March 31 states that the gross profit amounts to £237,906, against £226,745. After deducting general expenses and amount written off sundry assets, £28,685, there remains £209,221 ; £97,598 was brought forward, making £306,819. Debenture interest absorbed £90,979, leaving £215,841. The directors recommend a dividend of 6 per cent. for the year on the cumulative participating preference stock (on account of which £21,382 has already been paid), a dividend of 3 per cent. for the year on the Ordinary stock, to place to reserve £21,172, and to carry forward £112,116. The net profit shows an

(*continued on page 406.*)

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Limited,
ABCHURCH YARD, CANNON STREET,
LONDON, E.C.,
ENGINEERS & CONTRACTORS.

Complete Equipment
TRAMWAYS & LIGHT RAILWAYS
at home and abroad

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

DIVIDENDS PREV.	DIVIDENDS LAST.	NAME.	PAID.	PRICE, JULY 27, 1914.	CASH June 20 or previous.	A WEEK AGO
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	68½	67½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅞	60/-	58/9
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4⅞	48/9	48/9
4½%	4%	Do. 4% Deb.	100	91	69	72
4½%	4½%	Do. 4½% Deb.	100	98½	68	66½
5%	5%	Do. 5% Deb.	100	96	63½	63½
—	—	Associated Omnibus Co., Ord. ..	5/-	—	1/2	1/2
1/-	6d.	Auckland Elec. Trams. Ord. ..	1	1⅛	20/4½	20/4½
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	107	110½
—	1/-	Bath Electric Trams Pref. Ord.	1	½	3/6	3/6
6d.	6d.	Do. 5% Cum. Pref. ..	1	5/8	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72½	67½	67½
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	72½	72½
20/-*	28/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Do. 6% Cum. Pref. ..	10	11⅜	9 5/16	9 5/16
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	42⅝	41
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	86¼	86¼
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7½	5⅝	5⅝
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	80/6	80/6
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	91	91
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	35	35
6%	5%	Do. Pref. Ord.	100	106	45	45
5%	5%	Do. 5% Cum. Pref. ..	100	103	62	62½
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	82½	88½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	62½	62
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	32	32
6%	6%	Do. 6% Cum. Part. Pref.	100	—	74½	74½
5%	5%	Do. 5% Deb.	100	92	77	76
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	63½	63½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	77½	77½
6/6*	2/6	Calcutta Tramways Ord. ..	5	7½	7½	£7/0/6
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 1/16	81/3	80/-
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	74	73½
1/-*	1/-*	Cape Elec. Trams.	1	1/16	13/3	13/-
1/3	1/3	City of B. A. Trams	5	5½	81/-	80/7½
4%	4%	Do. 4% Deb.	100	97½	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	80	83
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	80½	80½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	57½	57½
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 5/16	7 5/16
6/-	6/-	Do. 6% Pref.	10	12	10⅝	10⅝
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/3	1/3
1/2⅜*	1/2⅜*	Do. 6% Cum. Pref. ..	1	1/16	10/3	10/3
4½%	4½%	Do. 4½% Deb.	100	67½	53	53
5½d.	8½d.	Hong Kong Tramway	5/-	5/16	19/6	19/6
5%	5%	Do. 5% Deb. ..	100	87½	76½	76½
2/6	3/-	Isle of Thanet 5% Pref. ..	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73½	44½	44½
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84½	74½	74½
—	—	La Plata Trams. Ord.	1	⅜	2/4½	2/4½
6/6	9/6	Lanarkshire Trams Co. ..	10	10½	10 5/16	10 5/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	69½	69½
9½d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	1/32	1/9	1/9
6d.	6d.	Do. 5% Pref.	1	5/16	6/6¾	7/3
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75½	59	59
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	82	82
5%	5%	Do. 5% Inc. Deb.	100	88½	76½	76
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	37½	37½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	82/6	82/6
5%	5%	Do. 5% Deb.	100	100	84½	84½
7½d.%	9d.*	Manaos Trams & Ltg. Ord. ..	1	1/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	68	68
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	74	74½
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	69	69
5%	5%	Do. 5% Deb.	100	87	76½	76½
$1½	$1½	Mexico Trams. Common ..	$100	70	30½	28
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	36	36
—	—	Do. 6% Mt. Bds. ..	100	76	30½	30½
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs. ..	100	100	93½	93½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	92	91
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2*	National Steam Car	1	1/32	15/6	16/-
9½d.*	9½d.*	New General Traction	1	⅜	7/1½	7/1½
6d.	8½d.	Northern Gen. Trans. Ord. ..	1	1/32	12/9½	12/9½
3/-	4/-	Para Elec. Rlys. Ord.	5	4½	81/3	83/9
5%	5%	Do. 5% 1st Deb.	100	89½	74½	72
—	—	Pernambuco Tram. & Power Ord	1	—	8/-	7/9
—	3½	Do. 7% Non. Cm. Part Pf.	1	—	14/3	14/3
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
8½d.*	8½d.*	Potteries Elec. Trac. Ord. ..	1	1/32	7/10½	7/10½
6d.	6d.	Do. 5% Pref.	1	1/32	12/6	12/6
1/4	8d.	Provincial Trams. Ord. ..	1	¼	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	88½	88½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	74½	74½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	87⅜	86
5%	5%	Do. 5% Perp. Deb. ..	100	99½	70⅜	70
10/-	15/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/6½	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	95	92
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	78	78
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	35/-	35/-
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	57	57
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅜	23/6	23/3
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅜	85/-	85/-
4½%	4½%	Do. 4½% 1st Deb.	100	85½	72½	72½
—	—	Metropolitan Dist. Ord. ..	100	21½	17⅜	16⅜
—	—	Undgd. Elec. Rys. of London ..	10	21½	35/7½	35/6
		Do. "A"	1/-	⅜	5/-	4/9
4½%	4½%	Do. 4½% Bds. of 1933 Rd. ..	—	99	104½	104½
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	98	98
4%	4%	Do. 6% In. Bonds Rd. ..	—	88½	77	76½

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AN OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C. ..	June 11	405	461	+ 56	10	5,318	..
Aberdeen Corporation ..	,, 12	2,197	2,603	+ 406	2	4,790	+ 772
Ayr Corporation ..	,, 15	472	538	+ 65	4	2,473	+ 599
Belfast City	,, 14	6,591	7,151	+ 560	11	84,378	+ 18,817
Birkenhead Corporation	,, 16	1,946	2,112	+ 166	11	23,234	+ 4,198
Blackburn	,, 5	1,403	1,981	+ 578	10⅔	19,154	+ 4,221
Bradford Corporation ..	,, 15	8,271	9,769	+ 1,498	11	91,070	+ 8,972
Burnley Corporation ..	,, 15	1,845	2,105	+ 260	..	..	..
Burton-on-Trent Cor. ..	,, 9	293	391	+ 98	10	3,973	+ 1,186
Bury Corporation ..	,, 16	1,691	1,953	+ 262	11	22,068	+ 3,813
Chatham & District ..	,, 6	1,584	1,484	— 100	23	27,344	+ 160
Cork Electric	,, 6	585	784	+ 199	23	13,642	+ 2,484
Derby Corporation ..	,, 15	1,222	1,508	+ 286	11	16,332	+ 3,720
Dundee City	,, 12	1,559	1,965	+ 406	4	7,870	+ 1,837
East Ham Corporation ..	,, 15	1,523	1,512	— 11	10⅔	15,511	— 10
Glasgow Corporation ..	,, 15	28,108	28,941	+ 833	24	67,024	+ 8,525
Glossop (U.E. Sup. Co.) ..	,, 15	173	174	+ 1	24	4,394	+ 1,091
Halifax Corporation ..	,, 11	2,621	2,612	— 9	10⅔	28,568	+ 3,498
do. Motor Buses ..	,, 11	23	59	+ 36	10⅔	630	+ 184
Huddersfield Corporation	,, 15	3,478	3,409	— 69	11	41,175	+ 3,988
Ilford U.D. Council ..	,, 15	773	993	+ 220	11	10,785	+ 2,706
Ipswich Corporation ..	,, 15	754	736	— 18	11	7,964	+ 1,520
Isle of Thanet ..	,, 15	356	301	— 55	37	9,889	— 2,465
Kilmarnock Corporation	,, 15	183	214	+ 31	4⅓	1,043	+ 219
Lanarkshire	,, 6	3,066	4,251	+ 1,185	23	76,543	+ 18,811
Lancashire United ..	,, 12	2,559	2,925	+ 366	24	65,958	+ 18,221
Leeds City	,, 15	11,754	13,293	+ 1,719	11	132,090	+ 15,855
Leicester Corporation ..	,, 15	3,881	4,542	+ 661	..	..	..
Leyton U.D. Council ..	,, 13	1,958	2,217	+ 259	11	22,830	+ 1,911
Liverpool Corporation ..	,, 8	16,065	19,445	+ 3,380	22⅔	394,227	+ 62,591
Llandudno & Colwyn Bay	,, 7	383	450	+ 67	27	8,236	+ 2,156
London County Council ..	,, 19	55,472	64,533	+ 9,061	11⅓	700,166	+ 74,816
Maidstone Corporation ..	,, 13	244	260	+ 16	10⅓	3,010	+ 498
Manchester Corporation ..	,, 15	22,026	24,764	+ 2,702	11	277,537	+ 54,734
Newcastle-on-Tyne Cor. ..	,, 15	8,028	9,141	+ 1,113	11	98,783	+ 17,985
New St. Helens & Dist. ..	,, 12	1,548	1,810	+ 262	50	72,984	+ 17,087
Northampton Cor. ..	,, 14	845	848	+ 3	11	9,650	+ 1,109
Nottingham Corporation ..	,, 13	4,473	5,917	+ 1,444	11	61,619	+ 16,133
Oldham Corporation ..	,, 18	3,053	3,364	+ 311	12	41,529	+ 8,002
Reading Corporation ..	,, 13	1,082	1,324	+ 242	11	13,440	..
Rhondda Tramways ..	,, 6	1,514	1,670	+ 156	23	38,019	+ 6,140
Rotherham Corporation	,, 19	1,759	2,106	+ 347	11⅔	24,321	+ 4,173
Sheffield Corporation ..	,, 16	11,986	13,655	+ 1,669	11⅔	160,526	+ 23,249
Southampton Cor. ..	,, 12	2,072	2,476	+ 403	10⅔	26,082	+ 6,551
Southend-on-Sea Cor. ..	,, 12	1,027	1,089	+ 62	11	9,788	+ 475
South Shields Cor. ..	,, 15	964	1,129	+ 165	11	12,186	+ 2,498
Sunderland Corporation ..	,, 15	1,908	2,001	+ 92	11	23,032	+ 3,879
Sunderland District ..	May 8	669	870	+ 201	27	23,094	+ 6,045
Swindon Corporation	June 12	289	269	— 20	10⅔	3,098	+ 509
Torquay Tramways	May 30	781	917	+ 136	22	16,114	+ 5,176
Tyneside Trys. & Trmrds	June 5	870	1,273	+ 403	23	21,302	+ 5,472
Wallasey Corporation	,, 15	1,708	1,770	+ 62	10⅔	19,532	+ 3,673
Walsall Corporation ..	,, 8	875	1,200	+ 325	10	12,185	+ 2,892
Walthamstow U.D. Coun.	,, 15	1,331	1,518	+ 187	11	15,874	+ 1,332
Warrington Corporation	,, 6	533	742	+ 209	10	7,126	+ 2,258
West Ham Corporation ..	,, 13	3,991	4,377	+ 386	10⅔	44,485	+ 4,654
Wigan Corporation ..	,, 13	1,967	2,207	+ 240	11	25,554	+ 5,328

TRAFFIC RETURNS SUSPENDED.

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Birmingham, Blackpool, Blackpool and Fleetwood, Bolton, Bournemouth, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Dublin United, Exeter, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Nelson, Newport (Mon.), Portsmouth, Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation, Yorkshire (West Riding).

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	June 17	£48,420	£55,314	24	£1,329,992	+ £94,868
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Mar. 31	3,329	3,928	52	44,572	+ 1,915
Brazilian Traction (Mirs.)	Apr.	7,453,000	8,330,000	17	31,576,000	+ 2,436,000
Brisbane	May	33,340	37,610	21	175,179	+ 14,059
British Columbia	$ Apr.	447,429	515,417	43	5,010,688	+ 496,254
Buenos Aires Lacroze ..	May	40,595	41,315	48	429,380	+ 3,322
Burmah Tram. & Light	Rs. Apr.	23,660	27,614	39	239,756	+ 4,945
Calcutta	Rs. June 8	64,508	72,232	23	1,641,101	+ 115,039
Cape Town	Apr.	16,705	19,011	..	..	..
Carthagena and Herrerias	May	4,321	5,027	21	22,585	+ 3,738
Cordoba	Feb.	11,896	12,972	47	147,938	+ 435
East India	May	1,455	1,920	43	14,207	— 4,933
Hong Kong	$ Apr. 27	12,101	13,039	17	229,677	+ 5,295
Kalgoorlie	Jan.	2,431	2,522	4	2,522	+ 91
La Plata	May	4,127	5,105	21	25,078	- 3,786
Lima	Apr.	37,834	43,557	17	171,112	+ 24,623
Lisbon	Escu Mar.	238,299	276,625	..	..	..
Madras (2 weeks)	Rs. May 31	33,405	41,152	21	403,879	+ 60,107
Manaos	Rs. Feb.	144,532	133,591	8	285,462	+ 5,563
Manila (8 weeks) ..	$ Feb. 28	73,200	93,000	8	93,000	+ 19,800
Montevideo	May	28,716	32,301	26	238,338	+ 23,000
Pernambuco	June 9	3,881	4,409	23	104,182	+ 20,993
Peruvian ..	$ May	902,781	1,022,120	48	11,424,560	+ 1,261,888
Port Elizabeth	Apr	3,904	4,028	..	..	..
Rangoon	May	4,737	5,719	21	28,582	+ 3,345
Shanghai	$ Oct. 3	24,953	28,458	..	..	..
Singapore	$ Apr. 13	13,131	14,260	15	202,259	+ 2,871
Toronto	$ Apr.	970,367	1,065,766	17	4,229,490	+ 332,895
Winnipeg	$ Apr	265,594	296,433	17	1,237,263	+ 77,913

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increase of £9,249. The aggregate receipts of the associated companies show an advance, but the wages paid and the cost of materials have also increased, and larger provisions have been made for future repairs and maintenance. In the Metropoiitan area war conditions generally have had a prejudicial effect. The question of increasing the statutory fares on tramways and light railways is now under the consideration of a Select Committee of the House of Commons. The amount standing to the credit of reserve account at March 31, 1917, was £425,000, to which has been added £3,828 in respect of debenture stocks purchased and cancelled. With the proposed allocation of £21,172 the reserve will then amount to £450,000. Investments now stand at £4,262,958, and yielded a revenne of £210,361, representing an average of 4·93 per cent. on the amount at which they appear in the balance-sheet, against 4·79 per cent. At March 31 there were uncalled liabilities on investments amounting to £42,901.

CONTRACTS AND ORDERS.

Glasgow Electricity Committee has authorised the engineer to purchase two second-hand petrol cars.

Brentwood Fire Brigade Committee has recommended the Council to purchase a motor for drawing the fire engine.

Hull Corporation has authorised the city engineer to purchase an electric vehicle at a cost of £1,165, and to apply for an import permit.

"The most comprehensive and illuminating work on the subject we have seen."—*The Daily Telegraph.*

DEPRECIATION & WASTING ASSETS

AND THEIR TREATMENT IN COMPUTING ANNUAL PROFIT AND LOSS

By P. D. LEAKE,

Fellow of the Institute of Chartered Accountants in England and Wales; Fellow of the Institute of Directors; Fellow of the Royal Statistical Society.

Particular attention is directed to a chapter on Depreciation and Controlled Establishments under the Munitions of War Act, 1915; and it may be added that the views of the Ministry of Munitions as to the proper treatment of Depreciation of Plant coincide with the views advocated in this work

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TRAMWAY TRACK CONSTRUCTION AND MAINTENANCE.

By R. BICKERSTAFFE HOLT,

Highways and Permanent Way Engineer, City of Leeds.

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Causes of rail corrosion—Exposure to sea water—Effect of corrosive liquid.

CHAPTER XII.—TRACK PAVING.
Effect of vehicular traffic—Cause of loose rails—Importance of quality in setts—Square-dressed setts—Nidged granite setts—Bonawe granite setts—Wood paving—Bedding of setts—Laying and ramming.

CHAPTER XIII—RECONSTRUCTION
Removal of tracks—Temporary tracks.

CHAPTER XIV.—SURFACE DRAINAGE AND RAIL MAINTENANCE.
Rail cleaning—Rail grinding—Rail planing.

CHAPTER XV.—SPECIAL TRACK WORK.
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THE

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NOTICES.

All Communications and Advertisements for next week's issue should be received not later than noon on Friday.

Advertisements for the next issue, of which proof is desired, should reach us by the second post on Wednesday.

The Editorial and Publishing Offices of "The Tramway and Railway World" are at Amberley House, Norfolk Street, London, W.C.2.

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GEO. E. HILLEARY,
Town Clerk.

Town Hall, West Ham, E.
26th June, 1918.

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Education Office, Darlington, June, 1918.

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H. G. STEAVENSON,
Town Clerk.

Darlington, June 17, 1918.

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JAMES HERON,
County Surveyor.

Court House, Downpatrick,
19th June, 1918.

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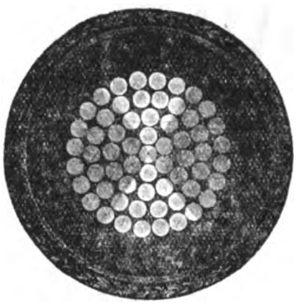
1837.  1918.

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SATURDAY, JUNE 29, 1918.

AN ENCOURAGING REPORT.

The report of the Electrical Trades Committee appointed by the Board of Trade is one of the most satisfactory documents that has been issued by any committee appointed to consider the position of industry after the war. Evidence was received from a number of bodies, including the Tramways and Light Railways Association, which are directly associated with the electrical industry, and the committee have been able unanimously to make a number of recommendations which, if carried out, should place the electrical industry in a position which it has never before attained. For twenty years those who have been conversant about the difficulties with which the promoters of electrical traction and power schemes and the manufacturers of electrical machinery and appliances have had to contend have always felt that the British electrical industry could never attain its proper position until a thorough reform had been effected in the legislation and conditions under which the generation and distribution of electricity are organised. The Committee now recommend that such reform should be carried out, and a like reform of the legislation affecting the promotion, construction, and operation of tramways and light railways. Not less necessary is the recommendation that import duties should be levied sufficiently high to protect effectively the manufacture of electrical appliances, and that there should be a prohibition of the sale in the United Kingdom of any imported electrical goods at prices lower than those prevailing in the country of origin. Before the war State departments and municipal corporations, as well as companies, not infrequently purchased electrical machinery and goods abroad, because by so doing they were enabled to obtain them at a cheaper price than they could be purchased at home. The explanation of the difference in price was due very largely to the lower wages paid abroad. Manufacturers here were compelled to pay the regular rates of wages that prevailed in this country, while their foreign competitors were not bound in any similar way. In other words, labour was protected, but the manufacturer was without the pale of a corresponding assistance. All this, if the Committee's recommendations are adopted, will be changed in the future, and State departments and public bodies will not be permitted to accept other than British tenders. Of special interest to those concerned in electrical traction are the remarks of the Committee on that subject. Much evidence was placed before the members showing that the Tramways Act of 1870, which was framed in the days of animal traction, had long become out of date, and that the Light Railways Act, instead of being cheap and expeditious, as was anticipated, had really aggravated the difficulties under which promoters have had to work. The paralysing effect of the purchase clause of the Tramways Act was strikingly illustrated by many witnesses. The Committee concur with the evidence that unless a complete revision of the present powers is made the development of tramways and light railways must continue to be impeded. In the direction of railway electrification the Committee anticipate important developments from a national point of view. They urge that it should not be allowed to develop in a piece-meal way, but should be dealt with uniformly. How advantageous, economically, is the application of electric traction to railway working was indicated by a witness of great experience, who said that from 10 to 15 per cent. on the capital involved could be secured from the electrical operation of important railway systems. Of the very great gain in convenience in working with electrical traction there is not the slightest doubt. In fact there is every reason to anticipate that from the point of view of public economy, as well as from that of the electrical manufacturer, there exists in the railway field a splendid opportunity for the development of a very prosperous electrical industry in this country.

LONDON TRAMWAY ESTIMATES.

At a meeting of the London County Council, on Tuesday, the Highways Committee submitted the revised estimates of revenue and expenditure for the year ending March 31, 1919 :—

Total receipts		£3,321,750
Total working expenses*		2,593,140
Surplus on working		£728,610
Interest on bank balances, rents, etc.		23,279
Total working surplus		£751,889
Charges against working surplus :—		
Debt charges, including £430,458 for repayment of capital and £264,747 for interest on capital	£695,205	
Income tax (less tax deducted and retained from interest paid) expenditure on surplus property and sundry items	44,569	
		739,774
Estimated net surplus (to be transferred to the renewals fund)		£12,115

*Including war service allowances and £50,000 provision for contingencies.

The revised estimates are based on the assumption that the car mileage during the year will be 50,000,000. This estimate of mileage depends on (i) maintenance of the necessary supply of power; (ii) the necessary repairs to cars being effected; and (iii) the necessary number of operatives being available. With regard to (i) the Committee remark that tramway undertakings have been called upon to reduce their consumption of coal by at least 15 per cent. The possibility of economy in coal has for a long time past engaged the Committee's closest attention, and methods adopted for coal economy at the power station, including the partial substitution of coke locally produced, have secured compliance with the immediate Government requirements without reducing the tramway services, which are at present limited to the public needs. As a further means of economising coal, the

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Highways Committee propose to grant a bonus to motormen and conductors for power saved in operating their cars. With regard to the supply of materials for repairs, great difficulties and delay have been experienced, but owing to the responsibilities of the Tramways (Board of Trade) Committee towards tramways essential to the prosecution of the war, a better basis has been established for obtaining materials, and it is hoped that there will be less difficulty in future. The Committee is advised that the immediate prospects with regard to staff requirements are far from satisfactory, owing to the operation of the Military Service Acts, and the maintenance of an adequate staff is a very serious problem.

The fare revision was applied on the tramways south of the River Thames as from May 18, and certain changes took effect on the lines north of the Thames on June 8, but owing to arrangements with other undertakings concerned in through running services, a complete fare revision has not yet been effected. The general manager anticipates that the increased revenue from the proposed fare changes might be expected to meet the deficiency balance of £205,290, which was anticipated if the old fares had been maintained, and the cost of urgent renewals (£125,000) during the year. The revised estimates show that not more than £12,115 will be available out of revenue for the year for the renewals fund. The Committee view with anxiety the constant and rapid growth of operating expenses, and the prospect of such a small appropriation out of revenue toward the cost of renewals, and they have given careful consideration to the question whether further steps should not be taken immediately by again increasing fares to improve the revenue. They consider that the effects of the recent fare revision must be carefully observed over a longer period to enable an opinion to be formed as to the prospects for the remainder of the year.

It is estimated that the passenger receipts will average 15·62d. per car mile on the estimated mileage of 50,000,000. The revised estimated receipts for 1917-18 were 13·82d. (Actual receipts for 1916-17, 12·01d., 1913-4, 8·94d.) Working expenses, excluding the special charges and war service allowances, are estimated at 11·2d. per car mile. (Actual expenses for 1916-17, 8·22d.; 1913-4, 6·47d.) The great growth in working expenses is due mainly to advances in war wages and the increase in the price of materials. The estimates contain a provision of £204,000 for the payment of allowances to officers and employees on war service. In 1917-18 the amount provided for this purpose was £114,300.

The total rates payable in 1918-19 are estimated at £109,940. The renewals fund at March 31, 1918, stood at £279,787. The cost of renewals of special track work, rails, tees, etc., during the current year is estimated at £125,000. The balance in the fund at March 31, 1919, on the basis of the estimates now submitted, is £102,592. The balance of the general reserve fund, calculating investments at cost price, is estimated to amount to £47,817 on March 31, 1919. It is estimated that the net debt, which on March 31, 1914, stood at £9,923,528, will be reduced by March 31, 1919, to about £8,390,000.

In the course of a discussion on fares Mr. A. H. Scott, vice-chairman of the Tramway Committee, said that the object of recent fare revisions was to simplify the system. Under present circumstances it was almost impossible for the Highways Committee to put forward any intelligent system for the coming year; although they had budgetted for 50 million car miles they did not know whether Government would allow them to be run.

Mr. Hume said that he would welcome any inquiry by the Finance Committee into prospective capital expenditure. The whole facts would be laid before the Council shortly in a comprehensive report.

LONDON TRAFFIC CONTROL.

Mr. Hume said he was sure that at the proper time the Council would be able to speak with a united voice on the question of traffic control. It was a big question as between omnibuses and tramways, and the whole situation would have to be considered. He would not be surprised if before long proposals might come forward which he hoped the Council would consider very seriously. The time was ripe for the solution of the problem.

INCREASED FARES.

There is a possibility of an increase in fares at Glasgow. A sub-committee specially appointed by the Finance Committee are considering the whole question, and they have asked the genera manager to prepare a report on the subject. The committee have since been requested to supply additional information on certain points, and the sub-committee will make a recommendation to the Corporation either for or against an increase, as they consider expedient. Although there was a surplus of £177,500 on the working for the year ended May 31 last, the burdens on the undertaking are increasing, and after the war a very large sum will be required to be spent on reconstruction. As a local paper remarks, "the surplus looks charming on paper, but a great concern like the tramways is bound to consider carefully the prospects of the immediate future."

Belfast City Council has decided in view of the increased cost of labour, materials, etc., to increase the fares on all routes in accordance with the new scale prepared by the manager. By a clerical error this statement was made in our last issue to apply to Sheffield.

Cardiff Corporation have unanimously adopted the recommendation of the general manager, Mr. Arthur Ellis, that 1d. fares should be increased to 1½d., 1½d. fares to 2d., and so on. Workmen's fares are to be increased by a halfpenny a mile, with a minimum of 1d., so that workmen will travel two miles for a penny, but must pay a halfpenny for each additional half mile travelled. Replying to a question, Mr. Ellis said that at the conclusion of the war the Committee would probably be faced with a demand for £150,000 for reconstruction. The expenditure was now £56,000 a year in excess of pre-war expenditure.

L.C.C. TRAMWAY MATTERS.

The London County Council met on Tuesday for the first time after the Whitsun recess. A report on the estimates for the current financial year, which is summarised in another column, was received and several other reports were submitted by the Highways Committee.

Bonus to Motormen and Conductors.

Acting on the suggestion of the Tramways (Board of Trade) Committee for the reduction of coal consumption, the Highways Committee have agreed after consultation with the employees to offer a bonus to motormen and conductors for economy of current on the following terms:—

(1) That the bonus shall be 50 per cent. of the value of the direct saving in fuel due to decreased consumption of electrical energy effected by motormen and conductors.

(2) That the saving (if any) shall be calculated from the number of units measured at the direct current bus-bars in the sub-stations compared with the number of units which would have been taken for the same car mileage at the average number of direct current units a car mile used during 1917-18. The direct current units a car mile for the year 1917-18 were 2·27, measured at the bus-bars in the sub-stations.

(3) That the value of the coal shall be calculated from the amount of coal burned per direct current unit delivered to the track feeders at the sub-station at the average purchase price of fuel free alongside Greenwich power station pier.

(4) That the value of any units purchased from other authorities shall be calculated at the same quantity and price of coal per direct current unit as if the units had been generated at the Greenwich power station.

(5) That the bonus (if any) is to be paid to motormen and conductors (male and female) on the basis of the actual number of days worked by each individual employee during the quarter. A day's work to be counted as one day, irrespective of hours worked.

(6) That the bonus be calculated and paid quarterly.

(7) That an employee leaving the service during the quarter shall be paid a bonus based on the number of days worked, at the ascertained figure for the previous quarter.

(8) That the bonus system shall be terminable at any time by three months' notice, either by the Council or the employees.

It is anticipated that if a saving of energy consumption of 10 per cent. could be effected by the drivers, at the present average price of fuel there would be a saving in the cost of coal of about £6,350 a quarter; 50 per cent. of this saving distributed equally to the drivers and conductors would represent a sum of about 12s. 5d. a quarter a head. It has been made clear to the employees that this bonus must not be regarded as part of their wages, and that it does not come within the category of matters within the purview of the Tramways Conciliation Boards.

There will be a certain amount of additional work in the tramways department in keeping the necessary register of days worked. No bonus will be paid unless a saving in fuel is effected, and the Council, whilst realising nearly half of any saving made, will in addition obtain other equally important benefits, e.g., reduced wear and tear in car equipment and plant generally, reduced loading of the cables (many of which are at present overloaded), and a reduction of the peak load at Greenwich generating station and on the sub-stations.

Legal Proceedings.

The Highways Committee reported that four persons had been fined for obstructing tramway cars and four for assaulting conductors, while one was sentenced to seven days' imprisonment. Six persons were fined for spitting on tramway cars, one for travelling beyond the distance paid for, one for refusing to show his ticket when required to do so, two were sentenced to imprisonment for selling copper, and one for being drunk on a car.

The Tramways and Governmental Grants.

Mr. G. H. Hume, chairman of the Highways Committee, in reply to a question by Mr. Gilbert, M.P., said that no grants had been made by the Ministry of Munitions in respect of the Council's tramways service. To meet traffic demands the Committee had spent £21,000 on the Woolwich sub-station and doubled the lines in the district at the cost of £6,000. The Highways Committee were considering the matter.

Reduction in Car Services.—At a meeting of the Ayr Tramways Committee, it was decided by 7 votes to 6 entirely to discontinue running the cars on Sundays. A considerable reduction in the number of stopping places has also been decided upon.—The number of stopping places on the Leicester tramways has been largely reduced, and from June 30 Sunday services will not be commenced until 10 a.m. "We must accept any slight inconvenience involved by the reduction of the tramway service uncomplainingly," says a local writer, "but it behoves conductors to be more than ever watchful that they do not overlook intending passengers at points where the cars pull up."

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GRANTS FOR MOTOR OMNIBUSES.

STATEMENTS IN THE HOUSE OF COMMONS.

MR. GILBERT, in the House of Commons on Wednesday, asked the Minister of Munitions the names of the seventeen routes in South-East London on which motor omnibuses receive financial grants from his Department; on which routes are competing municipal tramways; for how long these financial grants have been given, and what amount was paid in the year 1917 or the nearest complete year; and will he state if any such grants have been paid or offered to municipal tramways who have supplied special and extra service for munition workers in South-East London?

THE FINANCIAL SECRETARY TO THE MINISTRY OF MUNITIONS (Sir L. Worthington Evans): Financial grants have been made in respect of 17 services for the twelve months ending 30th June, 1917, amounting to £44,312. No claim has been put forward by the tramway companies, and the question of the payment of a grant to them has, therefore, not arisen. The names of the seventeen routes are as follows:—

(75) Plumstead and Croydon; (75a) Church Manorway and Sydenham; (72) Woolwich and Croydon; (99) Poplar and Erith; (99a) Poplar and Crayford; (109) Penge and Woolwich; (93) Sidcup and Woolwich; (53) West Hampstead and Plumstead; (53a) Charing Cross and Plumstead Common; (15) Ladbroke Grove and Gallions; (101) North Woolwich and Wanstead; (101b) North Woolwich and Cranbrook Park; (21a) Wood Green and Woolwich; (56) Mile End and Millwall; (103) Cubitt Town and Blackwall; (108) Blackwall Lane and Poplar; (110) Farnborough and Crayford.

These routes are in competition with the tramways, as follows:—(99 and 99a) Between Blackwall Lane and Plumstead; (109) Between Eltham and Woolwich; (93) Between Eltham and Woolwich; (53 and 53a) Between Westminster Bridge and Woolwich; (101 and 101b) Between the "Earl of Essex" and North Woolwich; (15) Between the East Ham Town Hall and Gallions; (21a) Between Shooters Hill Road and Woolwich.

MR. GILBERT: If the tramway authorities put forward any claim for consideration in the same way as the omnibus companies will the hon. gentleman undertake to consider it?

SIR L. WORTHINGTON EVANS: Of course, I am bound to consider any claim put forward, but the services rendered appear to me to be different.

MR. PERCY HARRIS: Has the Minister got authority from the Treasury for this £44,000?

SIR L. WORTHINGTON EVANS: I have no doubt we have, but if the hon. member wants a very precise answer I must ask for notice.

MR. GILBERT asked the Minister of Munitions (1) whether any financial grants to motor omnibus companies have been paid for any district of London other than the South-east district, and, if so, what districts; and for what districts further negotiations are proceeding for future grants, and with which motor omnibus companies; (2) whether he will state the average earnings per mile of the omnibuses in South-east London and the average earnings of omnibuses in the remainder of the Metropolis on which financial grants from his Department have been paid; will he state if all the grants have been paid to one or more omnibus companies; and will he give the names of the companies who have received such grants?

SIR WORTHINGTON EVANS: No financial grants have been paid to motor omnibus companies in any districts of London other than the South-east district, though a number of private hire arrangements exist, whereby certain State-owned factories and controlled establishments in the London area have hired omnibuses for the conveyance of workers to and from places where the travelling facilities are inadequate. The earnings per mile of the omnibuses in South-East London were given to my right hon. Friend in confidence, and I cannot disclose them. The grants have been made to the London General Omnibus Company, and it is with that company that negotiations are now pending.

MISCELLANEOUS NEWS AND NOTES.

Women Inspectors.—Plymouth Tramways Committee have advertised for women inspectors. The demand for men for the Forces has much depleted the staff, and a number of cars have had to be withdrawn from the service. At Leeds, women inspectors have been employed for some time, several of them having been promoted from conductors.

Proposed Edinburgh-Queensferry Tramways.—The application for Parliamentary Powers that is being made for the construction of this line are being put forward by Provisional Order and not by Private Bill. The enquiry will, therefore, be held in Edinburgh instead of in London, as would have been the case if a Bill were sought.

Edinburgh Tramways Expert Reports.—The Edinburgh Tramways Committee has reported that the accounts rendered by Mr. J. B. Hamilton, of Leeds, and Mr. J. S. Brodie, of Liverpool, who reported on the whole question of the tramway system of the city, amounted to £1,304. Mr. Harrison, convener of the Tramways Committee, in alluding to the accounts, said that the reports had been obtained on the instruction of the Council. They were of very great importance, and he believed would settle the kind of traction to be used when they came to remodel their tramways.

Dublin Tramway Tickets.—In reply to a communication from the Dublin Typographical Society, Mr. W. M. Murphy, chairman of the Dublin United Tramways Company, has stated that for years a Dublin firm has supplied the company with all the tickets that it was able to turn out. The firm was not, however, able to supply the company with much more than half of their requirements, which now exceed 66 millions of tickets annually, and for the balance the company has had to go elsewhere, as there is no other printing machinery in Dublin suitable for turning out tickets on a large scale.

Stoppage on the London United Tramways.—Owing to engine trouble at Chiswick generating station, the traffic on the London United Tramways was at a standstill for some time after 8 p.m. on Sunday. The number of omnibuses available was, of course, too small to accommodate the crowds that gathered at some of the up-river resorts and the breakdown caused much inconvenience.

Gas Fuel Competition.—It is stated that entries in the competition for the prize of £1,000 offered by the Automobile Association for the best method of using coal gas on motor vehicles already include a number of interesting inventions. The scheme has brought many valuable suggestions and a considerable correspondence from engineers and mechanics. The competition remains open until December 31.

Goods Traffic on Scottish Tramways.—Scottish tramway authorities are considering the suggestion of the Road Transport Board that tramway cars should be used for the carrying of goods and parcels. The idea of the Board is that by goods traffic on tramways a saving of horse haulage and petrol can be secured, and tramway authorities have been asked to prepare a return, showing what could be done by day or night.

Women Tramway Drivers.—The question of employing women as tramway drivers in Birmingham has been considered, but in view of the heavy traffic on the steep gradients, the proposal is not regarded by the tramway authorities with favour. For some months many discharged soldiers have been employed, and it is hoped that with the assistance given by voluntary drivers, of whom there are nearly three hundred, it may be possible to avoid the employment of women.

Discharged Soldiers on Darlington Tramways.—The Tramways Committee have replied to a complaint of the Darlington Council that discharged soldiers were refused employment on the tramways, that they were not aware that any discharged soldiers had been refused employment. In the event, however, of any such men being employed, they would have to take their turn with the women as drivers. Men who were suffering from shell shock could not, of course, be employed as drivers.

No Fare Changes at Sheffield.—As is generally known, it has not been necessary to discuss the question of increased fares at Sheffield. The subject has not even been brought to the notice of either the Tramways Committee or the City Council, and there is at present no intention to deal with the matter. The fare charged on the Sheffield tramways at all times of the day is one penny from the centre of the city to each suburban terminus within the city boundary. The traffic returns for the last completed week show an increase of £1,836 and 467,000 passengers over the corresponding period last year.

British Columbia Electric Railway.—The directors of the British Columbia Electric Railway Company have received cable advice that the Vancouver City Council have passed a by-law eliminating the opertion of motor-cars (jitney) competition after 1st July, next, but also reporting the receipt of a most serious demand for increased wages from the employees of the company based upon the increased cost of living and the emergeney rate of pay recently granted in shipbuilding and other trades. The matter is now before the Conciliation Board.

Strike at Cardiff.—The Municipal Employees' Association, whose members at Cardiff have been on strike, attempted to induce the tramway men to join them, but without success. The tramway employees, after meeting and deliberating on the situation for about an hour, declined to take sympathetic action. A member of the National Executive of the Union attended, and stated that the Executive had decided that in no circumstances would they sanction sympathetic action. A telegram was also received from the general secretary of the Union, recommending the men not to take action and this advice was accepted by a large majority.

The Industrial Reconstruction Council.—The work of the Industrial Reconstruction Council is expanding so rapidly that it has been found necessary to secure greater office accommodation, and the address of the organisation will in future be 2 and 4, Tudor Street, E.C.4. The work has been re-organised and divided into sections superintended by sub-committees. Mr. Ernest J. P. Benn remains chairman and administrative chief, Sir Alexander Roger is in charge of the membership section, Dr. William Garnett and Mr. Emil Davies control meetings, and Sir Herbert Nield, K.C., M.P., is Parliamentary representative.

Labour Difficulties at Glasgow.—The labour question is becoming increasingly serious at Glasgow. About 200 additional drivers are affected by the latest military Order and the tramway department has appealed for more women workers. Unless a sufficient number of women offer themselves for training, it will be necessary to curtail the service. Meanwhile, the traffic continues to increase. On Sunday last large crowds travelled to Rouken Glen and other resorts, and the revenue for the day amounted to £3,600, fully £400 more than for the corresponding day last year, while the week's traffic at £28,792 showed an increase of £2,000 over last year.

The Value of Car Jacks.—We have frequently urged tramway authorities to provide an adequate equipment of car jacks. There are accidents, happily rare, when jacks are required, and delay in obtaining them adds to the distressing character of such accidents. In Glasgow only the other day a child was run over by a tramway car, and the body could not be extricated until the car had been lifted by means of jacks. Fortunately, these were conveniently available. Very efficient car jacks can be obtained, and the question of cost ought not to prevent tramway owners from providing a sufficient number of them, so that they can be quickly available in case of need.

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Gas Traction Expert Sub-Committee.—It was recently announced that the Expert Sub-Committee of the Gas Traction Committee are to conduct their investigations concerning compressed gas, etc., in conjunction with the London General Omnibus Company, the Gas Light and Coke Company, and the Inspection Department of the Air Board. Mr. G. J. Shave, chief engineer of the Omnibus Company, and Mr. J. G. Clark, of the second named Company, have now been added to the sub-committee. The other members are Sir Boverton Redwood (chairman), Col. Bagnall-Wild, Mr. Worby Beaumont, Major A. Cooper-Key, Prof. Vernon Boys, Major B. Hopkinson, Mr. Shrapnell Smith, and Mr. S. Straker.

Damages Against Glasgow Corporation.—Lord Anderson in the Court of Session on June 21, disposed of two cases arising out of a tramway car accident at Victoria Road, Glasgow, on December 5, when a car left the rails, dashed on to the pavement and was overturned. The driver of the car was 16 years of age. Robert Graham claimed £750 damages from the Corporation in respect of injuries received in the accident. The Corporation admitted liability and tendered £125 with expenses, claiming that the sum sued for was excessive. The Court held that the pursuer's health had been seriously impaired and awarded him £500 with expenses. In the second case William Walsh, who sued for £500 damages, was awarded £200 with expenses.

Runaway Cable Car at Edinburgh.—An accident of a kind that very rarely happens took place at Edinburgh on Saturday morning. About 10 o'clock an empty cable car that had been standing unattended at Braid Hill terminus began to descend the slope before it was noticed. Conductor and driver, who had been in the men's shelter, were unable to overtake it. The car rapidly approached another car running in the same direction. The conductress of the second car shouted to the driver and jumped off just as the runaway car crashed into the rear of the car in front. Fortunately, there were no passengers in either car at the time. The force of the impact threw the gripper of the foremost car out of gear and the driver, who had remained at his post, could not detach the gripper from the cable. Consequently, the car continued to move with the speed of the cable. The driver shouted to the pointsman at Belhaven Terrace, and the latter telephoned a message to the power station, when the cable was stopped. The starting gear of the runaway car was then adjusted, the gripper detached from the cable and regular running was resumed after about an hour and a quarter.

Electrical Conference at Manchester.—The meeting of the Incorporated Municipal Electrical Association at Manchester on June 20 and 21, was attended by over 200 members, and the proceedings were of unusual interest. In his presidential address Mr. S. J. Watson, Electrical Engineer of Bury, advised the Association to form local sections on the lines of the Institute of Electrical Engineers. He referred to the question of the future of supply undertakings, and gave some striking statistics of the growth of electrical supply in Lancashire between 1905 and 1915. It is computed that the total electrical requirements in an area of 10 miles around Manchester will amount to five thousand million units at the end of the next two decades, with a maximum load approaching 1,000,000 k.w. Tables were given in the address dealing with the cost likely to be incurred in generating such large supplies by a modern power station. The discussion introduced by Mr. S. L. Pearce, city electrical engineer of Manchester, on the future of electric power supply, proved of much interest, and a large number of members took part. During the conference visits were made to the Stuart Street power station and to the works of the British Westinghouse Company at Trafford Park, and of Messrs. W. T. Glover and Company.

Oxford Circus Tube Railway Accident.—An interesting railway action recently came before Mr. Justice Darling and a special jury, arising out of an accident at Oxford Circus station, on the London underground railways, on January 30 last. The plaintiff, Mr. Towse, who was a consulting engineer, was trying to board a tube train at Oxford Circus when he was thrown on to the platform and injured. According to him, the train was stationary, and the conductor in closing the gates pushed him off and started the train. The defence was that Mr. Towse ran after the train, which was already in motion, and in trying to board it stumbled and fell. The plaintiff's counsel stated to the jury that the plaintiff brought the action as a protest against the methods of conductors on the underground railways in their treatment of the public at large, and not with a view of obtaining damages. The Judge in summing up warned the jury to confine their attention to the evidence in the case, and not to consider their own experiences. The jury found for the railway company, and judgment was entered accordingly.

Excessive Zeal.—A singular case was heard in Liverpool County Court on June 20, when Rose Clark, a tramway conductor, was awarded 10s. damages against a timekeeper for assault. The plaintiff, stated that on going to relieve another conductor on a car, she put up the chain to keep off a number of waiting passengers as the car was being swept out. The defendant told her that the pasengers had a right to get on the car to go upstairs if they wished, and a dispute arose. She persisted in keeping the chain up and the defendant seized her by the wrist, pushed her into the car, and threw her with some violence on to the seat. The defendant denied the assault and urged that the plaintiff was not a conductor of the car, not having yet relieved the one going off duty. What the defendant did was not more than was necessary to prevent interference by the plaintiff with his duties. The Judge awarded the plaintiff 10s., remarking that he had no doubt the defendant acted under great provocation. He expressed the hope that where the tramways employees were drawn from both sexes the men would not endeavour to settle differences in the way they might have attempted to do before the war.

Thermit, Limited, 675, Commercial Road, London, E., inform us that the whole of the company's shares which, in August, 1916, were sold by the Public Trustee to the Birmingham Metal and Munitions Co., Ltd., have now been taken over by Nobel's Explosives Co., Ltd., Glasgow, and under the new auspices the activities of Thermit, Limited, are being considerably extended. The company own many valuable patents connected with the engineering industry and, by their scientific application, are enabled to execute certain classes of work by methods other than those usually adopted. The company have at their disposal a highly trained staff of chemistss engineers and workmen, and are specialising in the manufacture of high-grade metals and alloys in connection with munitions of, war; also welding in all its branches by up-to-date methods, and engineering repairs generally. In principle the Thermit reaction is no doubt quite familiar to many of our readers, but the success of the process demands a good deal of practical experience based on scientific knowledge. The Company is now wholly British, to the entire elimination of all alien enemy interests, and the trade and country generally have the satisfaction of knowing that all business done with this Company is now assisting British trade and interests to the fullest possible extent.

Tramway Strike Averted at Newcastle,—A conference between Newcastle Tramways Committee and representatives of their employees was held on June 25 in connection with the men's application for an extra day's pay on account of the extra work and responsibility caused by the Race Week holidays. Mr. R. Mayne, chairman of the committee, presided, and the Lord Mayor (Sir George Lunn) was also present. The men stated that this was the first time a full week's holiday had been given to the city since war began, and it must cause them extra work. It was agreed that the matter should be submitted to the arbitration of the Lord Mayor, the terms of the agreement being as appended :—" That it shall be a subject matter for arbitration next week whether the conditions in Newcastle this week with regard to the general holiday are such as to warrant an extra day's pay to the tramway employees, similar to that which they received in Race Weeks under pre-war conditions; that if the arbitrator's decision gives any financial advantage to the tramway employees the same shall be included in the first pay after the award is given. That the Lord Mayor shall be the sole arbitrator, whose decision shall be final and binding on both parties; and that this arbitration shall have regard only to the question of the Race Week pay; and the men undertake not to raise the question of extra pay for national general holdays, unless it be raised on a national basis at the proper recognised central headquarters, so far as general holidays for 1918 are concerned."

PERSONAL.

Mr. H. H. Gordon, having joined the Forces, has resigned his seat on the Highways Committee of the London County Council.

Mr. J. W. Dugdale-Bradley, city engineer and surveyor of Westminster, has been granted an increase in salary from £1,200 to £1,300 a year.

Mr. A. F. Lucas, manager of Leicester Corporation Tramways, has been recommended by the Tramways Committee for an increase in salary from £500 to £600.

Mr. J. Bowen, city engineer and surveyor, has been appointed borough engineer and surveyor of Wimbledon, in succession to Mr. C. H. Cooper, who has resigned.

Mr. J. B. Feltham, electrical engineer to the Mexborough Urban Council, has been appointed honorary district engineer to the Coal Controller in connection with the fuel rationing scheme.

Mr. E. George Mawbey, borough surveyor of Leicester, who was responsible for the construction of the Corporation Tramways, has been granted an increase in salary from £1,250 to £1,400 a year.

Mr. W. J. Shave, chief engineer of the London General Omnibus Company, and **Mr. J. G. Clark** of the Gas Light and Coke Company, have been appointed members of the Sub-Committee which is investigating the use of gas for traction purposes.

The Late Mr. Robert W. Blackwell, of Elm Bank, Hampstead, formerly of Great Smith Street, Westminster, Chairman of R. W. Blaekwell and Company, Ltd., and of Johnson and Phillips, Ltd., left £91,388, gross—£90,890 net personality.

FINANCIAL REPORTS AND MEETINGS.

General Electric Co., Ltd.—This company made notable progress during the year ended March 31 last. The net profits have increased from £265,210 to £348,860. Of that sum £100,000 is placed to reserve, bringing that fund to £500,000, as compared with £400,000 a year ago. The board propose to capitalise port of the reserve fund, utilising £300,000 for this purpose, and to allot five new ordinary shares of £1 each for every £10 share now held. The existing £10 ordinary shares are to be converted to £1 shares. It is intended shortly to raise £1,000,000 further capital by an issue of ordinary and preference shares, for which Treasury sanction has been obtained. The ordinary dividend is again 10 per cent., free of tax. The sum to be carried forward is £145,286, subject to excess profits duty, if any. An agreement has been entered into for the purchase of the works of Fraser and Chalmers (Limited) at Erith.

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L.C.C. Traffic Receipts.—The traffic receipts for the week ended June 26, amounted to £64,866, an increase of £9,713 as compared with the corresponding period last year. The route mileage was 141.67, the same as a year ago. From April 1 (the commencement of the financial year) to June 26 (twelve and a half weeks), the total receipts were £765,006, an increase of £84,503 on the corresponding period of 1917.

British Electric Traction Company.—Mr. E. Garcke presided at the twenty-second annual meeting, held on June 25, at the Manchester Hotel, E.C. In moving the adoption of the report, the chairman said that the position presented the same general features as it did last year, but they were intensified. They had made more profit, because they had done more work, and having done more work they had had greater difficulties to overcome. The increased profits made by the associated companies had been applied mainly to strengthen the financial position. Including the sum of £97,598 brought into the account from the preceding year, there was a balance of £215,840 after deducting the interest on debenture stock, they suggested payment of the same dividends as last year—6 per cent. on preference stock, requiring £42,764, and 3 per cent. on ordinary stock, requiring £39,787; and that there should placed to reserve £21,172. The reserve would then stand at £450,000, and they recomended that there should be carried forward £112,116. Referring to the report of the Board of Trade Electrical Trades Committee in regard to the position of the electrical trades after the war, to the report of the Coal Conservation Sub-Committee of the Ministry of Reconstruction on electrical power supply, and to the report of the Committee appointed by the Board of Trade to consider the question of electrical power supply, the chairman said that they deserved careful attention by all who had invested capital in the industry. The three reports were a condemnation of the electrical legislation of the last thirty-six years and a vindication of the men who had persistently opposed this legislation and its tendencies. The condition of the electric industry before the war was ludicrous, for it was lamentable to contemplate the many years of effort spent in surmounting unnecessary obstacles. The general result was expressed in sparse profits, which meant low wages, inability to make research and unwillingness to undertake extensions. German manufacturers, who had a protected home market because they were encouraged by their Government, were able to compete in this country, and they were invited to do so by our municipalities. The conditions were bad for the manufacturer, but much worse for tramway and electric supply undertakings, which were surrounded by Acts subjecting them to the municipal veto. They were now told that cheapness had not been an unmixed blessing and that trade combinations were not an unmitigated evil. The explanation was that in the past politics had determined policies, while during the war urgency and efficiency had dispensed with the normal forms of legislation and procedure. The prevailing feeling now was that restrictions must be removed; that facilities for new enterprise and for extensions must be provided; that competition, and especially enemy competition, must be excluded, and that capital invested in the industry must be allowed to fructify so that labour could be adequately paid; that inventors might be encouraged and that the highest technical talent might be attracted to the production of electrical machinery and distribution of energy. If the problem was tackled in a comprehensive and equitable manner after the war was over, the electrical industry would prosper to an extent and in ways that would surprise many of its supporters. Sir E. Ollivant seconded the resolution, which was agreed to.

The Brush Electrical Engineering Company, Ltd. have an order from the Ipswich Corporation Electricity Committee for a 3,000 k.w. Brush-Ljungstrom turbo-alternator with condensing plant at £19,150. The Committee has authority to purchase other plant and machinery required for carrying out the complete scheme. Insert after Personal.

DICK, KERR & Co.,
Limited,
ABCHURCH YARD, CANNON STREET, LONDON, E.C.,
ENGINEERS & CONTRACTORS.
Complete Equipment
TRAMWAYS & LIGHT RAILWAYS
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PERNAMBUCO TRAMWAYS COMPANY.

DIVIDEND-PAYING STAGE REACHED.

The sixth ordinary general meeting of the Pernambuco Tramways and Power Company, Ltd., was held on June 25 in River Plate House, London, E.C., Mr. William Higgins in the chair.

The Secretary (Mr. H. Tattam) having read the notice convening the meeting and also the report by the auditors.

The Chairman, referring to the absence of Mr. Follett Holt (chairman of the company), said that this was due to Mr. Holt having been asked by the Government to form part of an important diplomatic and commercial mission which recently left these shores for South America. He was sure the shareholders would agree with him that Mr. Holt could not refuse this opportunity of assisting his country. The directors felt that his services to the mission would prove of great value to the Empire.

Moving the adoption of the report and accounts, the Chairman said that the incorporation of the company took place on January 24, 1913, and their construction programme was proceeding rapidly when war broke out in August, 1914. Since then their efforts towards completion of the original programme had been retarded, and the period from the outbreak of war had been one of considerable anxiety to the directors. Notwithstanding these troubles and difficulties, however, the confidence of the directorate in the ulitimate success of the undertaking was slowly but surely being confirmed. The past year had been one of continued progress and development in every branch of the business, and had it not been for the existing abnormal conditions they might have earned dividends on both classes of the share capital. Nevertheless, the directors were glad to be able to recommend a payment that would commence the dividend-earning period in the history of the company. The operating results showed a net increase over those of the previous year of £27,127, and this result would have been considerably increased had it not been for the extraordinary rise in the price of practically every item required in the successful working of such a company.

The tramway receipts had shown, and continued to show, a progressive rate of increase. The whole of the systems of the old mule tramways and the Brazilian Street Railway had now been electrified, and an electric tramway connection had been established with the important suburb of Olinda. They remained with just over eight miles of steam lines, being part of what used to be the Olinda Street Railway. Notwithstanding the enormous rise in the price of coal, the gas undertaking had shown a profit for the year. The improved plant laid down in the retort house had enabled the management to make great economies in the amount of coal carbonised. At the present moment they were carbonising some 3,750 tons per annum, a saving of about 50 per cent. of coal. In ordinary times coal would have cost the company £2 per ton. The price last year was £5 15s. and at the present moment it was £8. Bearing these figures in mind, it was evident that the directors were fully justified in anticipating a remunerative future for this branch of the business when the war was over and circumstances and prices again became normal. The new gasholder enabled them to provide their customers with the steady pressure so much needed, and had aided them materially in building up the business by the sale of gas for heating and industrial purposes.

With regard to the supply of current for lighting and power, the Chairman last year had said he anticipated that during 1918 they would see some good results from this branch of the business. The directors still hoped that this anticipation would be realised, but they met with the greatest difficulties in obtaining the necessary material to carry on the work, and, even when they had obtained it, great delays had arisen in getting shipping permits. At the present moment all endeavours were being made to supply their requirements as speedily as possible, and once the material arrived they had no doubt the process of erection would be speedy. There was a great demand for electric current in Pernambuco, and as soon as they were in a position to supply their customers good and improving results could be anticipated. The Telephone Company continued to show satisfactory progress and the result of the better service to their clients had shown itself plainly in the increased number of subscribers, and consequently in the improved receipts. It was also satisfactory to be able to report that they had enjoyed during the year under review a better rate of exchange, averaging 12·81d. as against 12·06d. in 1916. With regard to the future, the prospects were satisfactory. Since the commencement of the year there had been every week an increase in the traffic receipts from the tramway system, the total increase to date being approximately £22,000. The net results of working, so far as the directors knew them, also showed a distinct improvement compared with the corresponding period of 1917, and the directors had no reason to suppose that progress would not continue as the business developed. The city of Pernambuco was being brought up to date under the supervision of its progressive and go-ahead Government. For many years it jogged along with its more or less primitive methods of transit and with what could only be termed antiquated gas lighting facilities. To-day all this was changed, This company had supplied a modern system of electric tramways and entirely up-to-date gas installations, and they hoped in the near future to be able to provide the necessary current for electric lighting and power. It was satisfactory to know that their endeavours to meet the public in all these directions were appreciated by them.

Mr. H. K. Heyland seconded the motion, which was carried unanimously, and a dividend of 3½ per cent., less income-tax, was declared on the seven per cent. cumulative participating preference shares.

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PRICE LIST OF TRAMWAY AND OMNIBUS SHARES

DIVIDENDS PREV.	DIVIDENDS LAST.	NAME.	PAID.	PRICE, JULY 27, 1914.	CASH June 27 or previous.	A WEEK AGO.
5%	5%	Alabama Traction 5% 1st Mt. ..	—	67	69	68½
2/9	2/9	Anglo-Argentine 5½% 1st Pref.	5	4⅞	58/9	60/-
2/9	2/9	Do. 5½% Cum. 2nd Pref. ..	5	4½	48/9	48/9
4%	4%	Do. 4% Deb.	100	91	69	69
4½%	4½%	Do. 4½% Deb.	100	98½	68	68
5%	5%	Do. 5% Deb.	100	96	68⅜	68½
—	—	Associated Omnibus Co., Ord. ..	5/-	3/16	1/2	1/2
1/-	6d.	Auckland Elec. Trams. Ord. ..	1	1 3/32	20/4½	20/4½
5%	5%	Do. 5% 1st Mt. Deb. ..	100	102½	88½	88½
7%	7%	Barcelona Trac. 7% Pr. Lien ..	100	—	105	107
—	1/-	Bath Electric Trams Pref. Ord.	1	½	3/-	3/6
6d.	6d.	Do. 5% Cum. Pref. ..	1	3/16	10/9	10/9
4½%	4½%	Do. 4½% 1st. Mort, Deb. ..	100	72⅝	67¾	67¾
4½%	4½%	Birmingham Dist. Pwr. and Tract. Co. 4½% 1st Deb. ..	100	84½	72½	72½
20/-*	28/-*	Bombay Elec. Sup. & Tram Ord.	10	14	23 1/16	23 1/16
6/-	6/-	Do. 6% Cum. Pref. ..	10	11⅜	9 5/16	9 5/16
4½%	4½%	Do. 4½% Deb.	100	96	74	74
5%	5%	Do. 5% 2nd Mt. Deb. ..	100	100	87½	87½
$1	$1	Brazilian Trac. & Power Ord. ..	$100	66	43⅜	42⅜
$1½	$1½	Do. 6% Cum. Pref. ..	$100	97	85½	86⅜
4/-	4/-	Brisbane Elec. Trams. Ord. ..	5	7⅜	5⅜	5⅜
2/6	2/6	Do. 5% Cum. Pref. ..	5	5	82/6	80/6
4½%	4½%	Do. 4½% 1st Deb. ..	100	101½	90½	91
8%	8%	Brit. Col. Elec. Ry. Def. Ord. ..	100	107	40½	35
6%	5%	Do. Pref. Ord.	100	106	48	45
5%	5%	Do. 5% Cum. Pref. ..	100	103	62⅜	62
4½%	4½%	Do. 4½% 1st Mt. Debs. ..	40	99½	82½	82½
4½%	4½%	Do. 4½% Perp. Con. Deb.	100	96½	63	62½
£3*	£3*	Brit. Elec. Trac. Ord.	100	—	23	32
6%	6%	Do. 6% Cum. Part. Pref.	100	—	72⅜	74⅜
5%	5%	Do. 5% Deb.	100	92	77	77
4½%	4½%	Do. 4½% 2nd Deb. ..	100	77½	63½	63½
5%	5%	B. A. Lacroze 5% Mt. Deb. ..	100	100	77⅜	77⅜
2/6	5/6	Calcutta Tramways Ord. ..	5	7½	6 13/16	7⅜
2/6	2/6	Do. 5% Cum. Pref. ..	5	5 5/16	81/3	81/3
4½%	4½%	Do. 4½% 1st Deb. ..	100	99½	74	74
1/-*	1/-*	Cape Elec. Trams.	1	1/16	13/4½	13/3
1/3	1/3	City of B. A. Trams	5	5½	81/-	81/-
4%	4%	Do. 4% Deb.	100	97⅜	68½	68½
5%	5%	Colombo Elec. Tram. & Ltg. Co. 5% 1st Mort. Deb.	100	95	80	80
5%	5%	Co. F.C. do. Jardin Botanico 5% 1st Mort. Bds.	100	93½	82	80½
5%	5%	Costa Rica Elec. Lt. & Trac. Co. 5% 1st Deb.	—	63½	57⅛	57⅛
4/-	5/-	Dublin United Trams. Ord. ..	10	8	7 13/16	7 13/16
6/-	6/-	Do. 6% Pref.	10	12	10⅜	10⅜
—	—	Hastings & Dis. Elec. Tram Ord.	10/-	1/16	1/3	1/3
1/2⅝*	1/2⅝*	Do. 6% Cum. Pref. ..	1	1/16	10/3	10/3
4½%	4½%	Do. 4½% Deb.	100	67⅜	53	53
5½d.	8½d.	Hong Kong Tramway	5/-	3/16	19/6	19/6
5%	5%	Do. 5% Deb. ..	100	87⅜	76½	76½
2/6	3/-	Isle of Thanet 5% Pref. .	5	2½	19/9	19/9
4%	4%	Do. 4% Deb.	100	73⅜	44⅜	44⅜
5%	5%	Kalgoorlie Trams 5% A. Deb. ..	100	84⅜	74½	74½
—	—	La Plata Trams. Ord.	1	⅜	2/4½	2/4½
6/6	9/6	Lanarkshire Trams Co. ..	10	10½	10 7/16	10 7/16
5%	5%	Lancs. Un. Trams 5% Pr. Ln.	100	85½	69	69
5%	5%	Lisbon Elec. Trams 5% Mt. Debs.	100	95	69¾	69¾
9¾d.*	7½d.*	Llandudno & Colwyn B. Ord.	1	—	10/-	10/-
—	1½d.	London & Sub. Traction Ord. ..	1	1/32	2/3	1/9
6d.	6d.	Do. 5% Pref.	1	3/16	6/6	6/6½
4½%	4½%	Do. 4½% 1 Mt. Deb. ..	100	75⅜	62	59
4½%	4½%	L.G.O. 4½% 1st Deb.	100	100	82	82
5%	5%	Do. 5% Inc. Deb.	100	88½	76½	76½
4%	4%	Lon. Unt. Trams. 4% 1st Mt. Db.	100	55	41⅞	37½
3/-	3/-	Madras Elec. 6% Pref. ..	5	5 1/16	82/6	82/6
5%	5%	Do. 5% Deb.	100	100	84½	84½
7½d.%	9¾d.*	Manaos Trams & Ltg. Ord. ..	1	1 3/32	3/1½	3/1½
5%	5%	Do. 5% 1st Deb.	100	77	68	68
$1½	$1½	Manila Elec. R. R. & Light ..	$100	102	74	74
4½%	4½%	Met. Elec. Trams. 4½% Deb. ..	100	85½	70½	69
5%	5%	Do. 5% Deb.	100	87	76½	76½
$1½	$1½	Mexico Trams. Common ..	$100	70	33	30½
5%	5%	Do. 1 Mt. 5% G.B. ..	—	84	45	36
—	—	Do. 6% Mt. Bds. ..	100	76	36½	30½
4½%	4½%	Montreal St. Ry. 4½% Stg. Dbs...	100	100	93½	93½
4½%	4½%	Do. 4½% Stg. Debs. (1922)	100	99	91	92
5%	5%	Montreal Trams. Co. 5% Gld. Bd.	—	103	98½	98½
2/-	1/2*	National Steam Car	1	1/32	16/3	15/6
9¾d.*	9¾d.*	New General Traction	1	⅛	7/1½	7/1½
6d.	8½d.	Northern Gen. Trans. Ord. ..	1	3/16	12/9½	12/9½
3/-	4/-	Para Elec. Rlys. Ord.	5	4½	81/3	81/3
5%	5%	Do. 5% 1st Deb. ..	100	89½	73⅜	74½
—	—	Pernambuco Tram. & Power Ord	1	—	8/-	8/-
—	3½%	Do. 7% Non. Cm. Part Pf.	1	—	14/4½	14/3
5%	5%	Portland Ry. 5% 1st Mt. 30 yr.	—	96	—	—
8½d.*	8¾d.*	Potteries Elec. Trac. Ord. ..	1	1 1/32	7/10½	7/10½
6½d.	6d.	Do. 5% Pref.	1	1 1/32	12/4½	12/6
1/4	8d	Provincial Trams. Ord. ..	1	⅛	18/-	18/-
3/-	3/-	Rangoon Tram. 6% Cum. Pref.	5	5½	85/-	85/-
5%	5%	Rhondda Trams. 5% 1 M. Deb.	100	88	80½	80½
5%	5%	Rio de Janeiro Try. & Pr. 1st Mt. 30 yr. 5% Gld. Bd. '35 ..	—	97½	88	88½
5%	5%	Do. 1st Mt. 5% 50 yr. ..	100	89½	75½	74½
5%	5%	Sao Paulo Deb. 5% 1st Mt. ..	$500	99	87⅜	87⅜
5%	5%	Do. 5% Perp. Deb. ..	100	99½	70	70½
10/-	15/-	Shanghai Elec. Cons.	10	13	14½	14½
3d.	3d.	Singapore Elec. Trams. ..	5/-	¼	4/6½	4/6½
4%	4%	Sou. Met. Elec. Tram & Ltg. 4% Db	100	66	49	49
5%	5%	S. Elec. Trams. of B.A. 5% Mt. ..	—	100½	93½	93½
4½%	4½%	Toronto 1st Mt. 4½% Bds. ..	100	98	95	95
4½%	4½%	Tramways (M.E.T.) Omnibus 4½% Debs.	100	91	78	78
2/-	2/-	Un'd. El. Tr. Monte Video Ord.	5	4½	35/-	35/-
4½%	4½%	Winnipeg El. 4½% Deb. ..	100	94½	57	57
—	—	Yorks (W.R.) Elec. Trams. Ord.	5	⅜	23/6	23/6
3/-	3/-	Do. 6% Cum. Pref. ..	5	⅜	85/-	85/-
4½%	4½%	Do. 4½% 1st Deb.	100	85½	72⅜	72⅜
—	—	Metropolitan Dist. Ord. ..	100	21½	18	17⅜
—	—	Undgd. Elec. Rys. of London ..	10	21½	38/3	35/7½
		Do. "A"	1/-	⅜	5/1½	5/-
4½%	4½%	Do. 4½% Bds. of 1933 Rd.	—	99	104⅛	104⅜
6%	6%	Do. 6% 1st. Cum. In. Db.	100	114	99	98
4%	4%	Do. 6% In. Bonds Rd. ..	—	88⅛	78 1/16	77

*Indicates dividend for the year. In other cases the dividend is for the half-year.

TRAMWAYS AN OMNIBUS TRAFFIC RETURNS

NAMES.	Week ended	Latest Return. 1917	1918	Incr. or Dec.	Aggregate. Wks.	1918	Incr. or Dec.
Aberdare U.D.C. ..	June 18	415	443	+ 28	11	5,762	..
Aberdeen Corporation ..	„ 19	2,228	2,434	+ 206	3	7,225	+ 979
Ayr Corporation ..	„ 22	471	603	+ 132	5	3,077	+ 731
Belfast City	„ 21	6,448	7,031	+ 583	12	91,409	+ 19,400
Birkenhead Corporation ..	„ 23	1,859	2,053	+ 194	12	25,288	+ 4,392
Blackburn	„ 19	1,522	1,608	+ 86	12⅜	22,476	+ 4,446
Bradford Corporation ..	„ 15	8,271	9,769	+ 1,498	11	91,070	+ 8,972
Burnley Corporation ..	„ 22	1,745	2,188	+ 443	..	..	..
Burton-on-Trent Cor. ..	„ 23	289	400	+ 111	12	4,765	+ 1,393
Bury Corporation ..	„ 23	1,554	1,939	+ 385	12	24,025	+ 4,198
Chatham & District ..	„ 13	1,540	1,351	— 189	24	28,694	— 30
Cork Electric	„ 13	655	666	+ 11	24	14,307	+ 2,494
Derby Corporation ..	„ 22	1,183	1,461	+ 278	12	17,794	+ 3,999
Dundee City	„ 19	1,572	1,859	+ 287	5	9,729	+ 2,124
East Ham Corporation ..	„ 22	1,404	1,555	+ 151	11⅜	17,065	+ 140
Glasgow Corporation ..	„ 22	27,014	28,819	+ 1,805	3⅝	95,843	+ 9,491
Glossop (U.E. Sup. Co.) ..	„ 22	163	167	+ 4	25	4,562	+ 1,096
Halifax Corporation ..	„ 18	2,681	2,453	— 228	11⅜	31,020	+ 3,270
do. Motor Buses ..	„ 18	42	55	+ 13	11⅜	685	+ 197
Huddersfield Corporation	„ 22	3,233	3,396	+ 163	12	44,571	+ 4,152
Ilford U.D. Council ..	„ 22	757	975	+ 218	12	11,761	+ 2,933
Ipswich Corporation ..	„ 22	712	702	— 10	12	8,667	+ 1,510
Isle of Thanet	„ 22	440	278	— 162	38	7,702	— 2,627
Kilmarnock Corporation	„ 22	183	232	+ 49	5⅜	1,275	+ 268
Lanarkshire	„ 13	3,144	3,696	+ 552	24	80,239	+ 19,364
Lancashire United ..	„ 19	2,485	2,842	+ 357	25	68,800	+ 18,500
Leeds City	„ 22	10,998	13,296	+ 2,298	12	145,387	+ 17,908
Leicester Corporation ..	„ 22	3,575	4,463	+ 888	..	..	..
Leyton U.D. Council ..	„ 20	1,898	2,129	+ 231	12	24,959	+ 2,142
Liverpool Corporation ..	„ 22	16,228	18,159	+ 1,931	24⅜	430,503	+ 65,731
Llandudno & Colwyn Bay	„ 14	372	487	+ 115	28	8,723	+ 2,271
London County Council ..	„ 26	55,153	64,866	+ 9,713	12½	765,006	+ 84,503
Maidstone Corporation ..	„ 20	238	248	+ 10	11⅜	3,259	+ 508
Manchester Corporation	„ 22	20,933	25,023	+ 4,090	12	302,560	+ 58,210
Newcastle-on-Tyne Cor.	„ 22	8,086	9,093	+ 1,007	12	107,876	+ 18,934
New St. Helens & Dist. ..	„ 19	1,476	1,670	+ 194	51	74,653	+ 17,185
Northampton Cor. ..	„ 20	823	813	— 10	12	10,462	+ 1,098
Nottingham Corporation	„ 19	4,886	5,931	+ 1,545	12	67,041	+ 16,404
Oldham Corporation ..	„ 23	2,744	3,444	+ 700	13	44,973	+ 8,702
Reading Corporation ..	„ 20	1,088	1,253	+ 165	12	14,694	..
Rhondda Tramways ..	„ 13	1,567	1,735	+ 168	24	39,754	+ 6,308
Rotherham Corporation	„ 26	1,683	2,316	+ 633	12⅜	26,638	+ 5,007
Sheffield Corporation ..	„ 23	11,609	13,296	+ 1,687	12⅜	173,823	+ 24,937
Southampton Cor. ..	„ 19	2,077	2,439	+ 362	11⅜	28,521	+ 6,913
Southend-on-Sea Cor. ..	„ 19	1,003	1,113	+ 110	12	10,901	+ 585
South Shields Cor. ..	„ 15	964	1,129	+ 165	11	12,186	+ 2,498
Sunderland Corporation..	„ 22	1,802	2,010	+ 208	12	25,042	+ 4,087
Sunderland District ..	May 8	669	870	+ 201	27	23,094	+ 6,045
Swindon Corporation	June 19	286	279	— 7	11⅜	3,377	+ 350
Torquay Tramways .	May 30	781	917	+ 136	22	16,114	+ 5,176
Tyneside Trys. & Trmrds.	June 12	1,002	1,165	+ 163	24	22,468	+ 5,635
Wallasey Corporation	„ 22	1,557	1,740	+ 183	11⅜	21,271	+ 3,855
Walsall Corporation ..	„ 22	910	1,170	+ 260	12	14,525	+ 3,390
Walthamstow U.D. Coun.	„ 22	1,244	1,456	+ 212	12	17,330	+ 2,546
Warrington Corporation	„ 6	533	742	+ 209	10	7,126	+ 2,258
West Ham Corporation	„ 20	3,680	4,288	+ 607	11⅜	48,772	+ 5,262
Wigan Corporation* ..	„ 20	1,927	1,537	— 390	12	27,091	+ 4,932

* Owing to strike of employees service, suspended June 15 and 16.

TRAFFIC RETURNS SUSPENDED.

The following Corporations and Companies have suspended the issue of their Tramway Traffic Returns during the War:—Accrington, Bath, Birmingham, Blackpool, Blackpool and Fleetwood, Bolton, Bournemouth, Brighton, Bristol, British Electrical Federation, Cardiff, Chesterfield, Colne, Croydon, Dover, Dublin & Lucan, Dublin United, Exeter, Glasgow Subway Co., Hull, Leith, London General Omnibus Co., London United Tramways Co., Lowestoft, Metropolitan Electric Tramways, Ltd., National Steam Car Co., Nelson, Newport (Mon.), Portsmouth, Preston, Provincial, Rochdale, Salford, South Metropolitan Electric Tramways, Tramways (M.E.T.) Omnibus Co., Wolverhampton Corporation, Yorkshire (West Riding).

FOREIGN AND COLONIAL TRAMWAY TRAFFIC RETURNS.

NAME.	Week or Month.	Latest Return. 1916-17	1917-18	Aggregate. Wks.	1917-18	Increase or Dec.
Anglo-Argentine	June 24	£52,296	£50,966	25	£1,380,958	+ £93,538
Auckland .. (28 days)	Oct. 26	21,428	22,308	17	92,118	+ 7,832
Ballarat and Bendigo (4 wks)	Mar. 31	3,329	3,928	52	44,572	+ 1,915
Brazilian Traction (Mirs.)	Apr.	7,453,000	8,330,000	17	31,576,000	+ 2,436,000
Brisbane	May	33,340	37,610	21	175,179	+ 14,059
British Columbia .. $	Apr.	447,429	515,417	43	5,016,688	+ 496,254
Buenos Aires Lacroze ..	May	40,595	41,315	48	429,380	+ 3,322
Burmah Tram. & Light Rs.	Apr.	23,660	27,614	39	239,756	+ 4,945
Calcutta .. .. Rs.	June 15	66,098	72,129	24	1,713,230	+ 121,070
Cape Town	Apr.	16,705	19,011	..	..	..
Carthagena and Herrerias	May	4,321	5,027	21	22,565	+ 3,738
Cordoba	Feb.	11,896	12,972	47	147,938	+ 435
East India	May	1,455	1,920	43	14,207	— 4,933
Hong Kong .. .. $	Apr. 27	12,101	13,039	17	229,677	+ 5,295
Kalgoorlie	Jan.	2,431	2,522	4	2,522	+ 91
La Plata	May	4,127	5,105	21	25,078	+ 3,786
Lima	Apr.	37,834	43,557	17	171,112	+ 24,623
Lisbon .. .. Escu	Mar.	238,299	276,625	..	..	..
Madras (2 weeks) Rs.	May 31	33,405	41,152	21	403,879	+ 60,107
Manaos .. .. Rs.	Mar.	161,156	157,337	13	442,799	+ 3,819
Manila .. .. $	Apr.	65,600	84,000	17	274,000	+ 68,060
Montevideo	May	28,716	32,301	26	238,338	+ 23,000
Pernambuco	June 23	4,144	4,539	25	113,114	+ 22,055
Peruvian .. .. $	May	902,780	1,022,120	48	11,424,560	+ 1,261,888
Port Elizabeth	Apr	3,904	4,028	..	..	..
Rangoon	May	4,737	5,719	21	28,582	+ 3,345
Shanghai .. .. $	Oct. 3	24,953	28,458	..	..	..
Singapore .. .. $	May 4	12,403	13,742	18	242,897	+ 5,786
Toronto .. .. $	Apr.	970,367	1,065,766	17	4,229,490	+ 332,895
Winnipeg .. .. $	Apr	265,594	296,433	17	1,237,263	+ 77,913

Wanted.—Copies of the TRAMWAY AND RAILWAY WORLD, Volume XXXIX, No. 1 (January 1, 1916), to complete files for binding.—Reply to Box, 24, THE TRAMWAY AND RAILWAY WORLD, Amberley House, Norfolk Street, London, W.C.2.

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Telegraphic Addresses and Telephone Numbers

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NAME OF COMPANY OR FIRM.	ADDRESS.	TELEGRAPHIC ADDRESS.	TELEPHONE NO.
Albion Motor Car Co., Ltd.	Scotstoun, Glasgow	Automobile, Glasgow	Scotstoun, West'n, 1991.
Allen & Co., Ltd., Edgar	Imperial Steel Works, Tinsley, Sheffield	Allen, Sheffield	Sheffield, 917, 265.
Allen & Co., Ltd., Edgar (Tramway Dept.)	Imperial Steel Works, Tinsley, Sheffield	Askham, Sheffield, (Tramway and Machinery)	Sheffield, 213.
Anger Manufacturing & Supply Co., Ltd.	Bank Chambers, Preston	Brakjuster, Preston	Preston, 1033
Attwater & Sons	Hopwood Street Mill, Preston	Attwaters, Preston	Preston, 1045 (2 lines).
Austin Motor Co., Ltd.	Longbridge Works, Northfield, Birmingham	Speedily, Northfield	King's Norton, 230-234.
Auto-Ticket Printing Co., Ltd.	41, Wapping, Liverpool	Extension, Liverpool	Bank, Liverpool, 4646.
Avon India Rubber Co., Ltd.	Melksham, Wilts	Rubber, Melksham	Melksham; 2.
Babcock & Wilcox, Ltd.	30, Farringdon Street, London, E.C.4	Babcock, London	City 6470 (8 lines).
Baker & Co. (Rotherham), Ltd., J.	Brinsworth Iron and Wheel Works, Rotherham	Brinsworth, Rotherham	Rotherham, 89 and 435.
Beckett, Laycock & Watkinson, Ltd.	Willesden, London, N.W.	Beclawat, Lofidon	Willesden, 1558.
Belliss & Morcom, Ltd.	Ledsam Street Works, Birmingham	Belliss, Birmingham	Birmingham, 3044.
Bell Punch & Printing Co., Ltd.	52-58, Tabernacle Street, London, E.C.2	Belpunch, Finsquare, London	Central, 7531.
Bowater & Sons, W. V.	159, Queen Victoria Street, London, E.C.4	Sparteolus, London	Bank, 536.
Bridgeport Brass Co.	Broadway and Murray Street, New York, U.S.A.	—	—
Brill Co. J. G.	110, Cannon Street, London, E.C.4	Axles, London	Bank, 6018.
Brimsdown Lead Co., Ltd.	Brimsdown, Middlesex	Hydration, Enfield	Waltham Cross, 132.
Britannia Lamp & Accessories Co., Ltd.	Britannia House, 48, Milton St., London, E.C.2	Aetnaco, Barb, London	City 1257 12 lines).
British Hele-Shaw Patent Clutch Co., Ltd.	Suthers Street, Oldham	Prehension, Oldham	Oldham, 1133.
British Insulated & Helsby Cables, Ltd.	Prescot, Lancs.	Insulator, Prescot	Prescot, 8.
British Reinforced Concrete Engineering Co.	1, Dickinson Street, Manchester	Brenforce, Manchester	City, Manchester, 8430.
British Thomson-Houston Co., Ltd.	Rugby	Asteroidal, Rugby	Rugby 54 (5 lines).
British Westinghouse Electric & Mfg. Co., Ltd.	Westinghouse Bldg., Norfolk St., London, W.C.2	Multiphase, Estrand, London	Gerrard, 3261 and 2476
Brookhouse & Co., Ltd.	Victoria Works, Hill Top, West Bromwich	Brockhouse, West Bromwich	West Bromwich, 431.
Burford & Co., Ltd., H. G.	11, Waterloo Place, London, S.W.1	—	Regent, 5281.
Chloride Electrical Storage Co., Ltd.	Clifton Junction, nr. Manchester	Chloridic, Pendlebury	Central, Manchester, 1638
Clayton & Co. (Huddersfield), Ltd.	Karrier Works, Huddersfield	Karriakar, Huddersfield	Huddersfield, 1441, 2, 3
Coan, R. W.	219, Goswell Road, London, E.C.1	Krankases, Isling, London	Central, 4879 : City, 3846
Commercial Cars, Ltd.	Biscot Road, Luton	Komerkars, Luton	Luton, 192 and 193.
Courtenay, J. W., Ltd.	Amberley House, Norfolk Street, W.C.2	Tramigro, London	City, 7630.
Coventry Chain Co., Ltd.	Spon End Works, Coventry	Chains, Coventry	Coventry, 830
Daimler Co., Ltd.	Daimler Works, Coventry	Daimler, Coventry	Coventry, 505.
Dennis Bros. (1913), Ltd.	Onslow Works, Guildford	Dennis, Guildford	Guildford, 129, and 329.
Dick & Co., Ltd., W. B.	90, Fenchurch Street, London, E.C.3	Dicotto, London	Avenue, 7854.

(*Continued on page iv.*)

THE AUTOBUS

IN THE TRAMWAY WORLD.

Motor Traffic Section.

When "The Tramway and Railway World" was founded in 1892, motor traction was, of course, scarcely dreamt of, but the avowed object of the paper was to encourage all new methods that gave promise of usefulness.

In pursuance of that policy the progress of motor traction received early attention. Commenting on the historic motor parade to Brighton in 1896, "The Tramway and Railway World" predicted that

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MOTOR TRAFFIC SECTION

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NAME OF COMPANY OR FIRM.	ADDRESS.	TELEGRAPHIC ADDRESS.	TELEPHONE No.
Dick, Kerr & Co., Ltd.	Abchurch Yard, Cannon Street, E.C.4	Dicker, Cannon, London	Bank 5866 (4 lines).
Docker Brothers, Ltd.	170, Bishopsgate, London, E.C.2	Matured, London	London Wall, 775.
Dunlop Rubber Co., Ltd.	Manor Mills, Aston, Birmingham	Elastic, Birmingham	Birmingham, East, 123
Electro-Mechanical Brake Co., Ltd.	Eagle Works, West Bromwich	Brakes, West Bromwich	West Bromwich, 291
Equipment & Engineering Co.	Westinghouse Bldg., Norfolk St., London, W.C.2	Kharparts, Estrand, London	City, 1088 (2 lines).
Fleming, Birkby & Goodall, Ltd.	Liversedge, Yorks	Woodfield, Liversedge	Cleckheaton, 103.
Fodens, Ltd.	Sandbach, Cheshire	Foden, Sandbach	Sandbach, 7.
Gabriel & Co.	4 and 5, A. B. Row, Birmingham	Gabriel, Birmingham	Birm'ham, Central, 1223.
General Electric Co., Ltd.	67, Queen Victoria Street, London, E.C.4	Polyphase, London	London Wall, 3600.
General Seating Co., Ltd.	13, City Road, London, E.C.1	Cushioning, Finsquare, Lond.	London Wall, 6187.
Glasgow Numerical Printing Co.	31, Finnieston Street, Glasgow	Tickets, Glasgow	Glasgow, 5350.
Glenn, J. Barber	Moorgate Station Chambers, London, E.C.2	Octet, Ave., London	London Wall, 262.
Goodrich Co., Ltd., B. F.	117-123, Golden Lane, London, E.C.1	Socketed, Barb, London	City, 5345.
Green & Sons, Ltd., E.	2, Exchange Street, Manchester	Economiser, Manchester	Manchester, 1375
Green & Co. (Feltham), Ltd., Geo. W.	Q-Fel Works, Feltham	Cufel, Feltham	Feltham, 14.
Grover & Co., Ltd.	Carpenters' Road, Stratford, London, E.15	Adopted, Strat., London	Stratford, 984 and 985.
Hadfields, Ltd.	Hecla Works, Sheffield	Hadfield, Sheffield	Sheffield, 750, 2628, & 263
Halley's Industrial Motors, Ltd.	Yoker, Glasgow	Horseless, Glasgow	Clydebank, 196 and 197.
Hays, Hunter, & Standen, Ltd.	71, Southwark Street, London, S.E.1.	Bimarginal, Cannon, London	City, 3456 and 3457.
Henley's Telegraph Works, Ltd.	13 and 14, Blomfield Street, London Wall, E.C.2	Henletel, Ave., London	London Wall, 4560.
Henley's Telegraph Works, Ltd. (Tire Dept.)	18, Union Street, Moorfields, E.C.2	Hetewocol, Ave., London	London Wall, 3886.
Herbert Frood Co., Ltd.	Sovereign Mills, Chapel-en-le-Frith	Friction, Chapel-en-le-Frith	Chapel-en-le-Frith, 19
Hoyt Metal Co., Ltd.	189, Hammersmith Road, London, W.6.	Profanity, Phone London	Hammersmith, 1702.
Hurst, Nelson & Co., Ltd.	Motherwell, Scotland	Nelson, Motherwell	Motherwell, 44.
Johnson & Phillips, Ltd.	Charlton, London, S.E.7.	Juno, Charlton, London, S.E.	Greenwich, 400.
Kalker & Co., E.	23, Much Park Street, Coventry	Kalker, Coventry	Coventry, 24X.
Kearsley & Co., Ltd., Robt.	Ripon, Yorks	Kearsley, Ripon	Ripon, 5.
Lacre Motor Car Co., Ltd.	78, York Road, King's Cross, London, N.1	Unbaffled, London	North, 2708.
Leyland Motors, Ltd.	Leyland, Lancs	Leymotors, Leyland	Leyland, 37.
Lorain Steel Co.	36-38, New Broad Street, London, E.C.2	Thoughtful, London	London Wall, 8186.
Macintosh & Co., Ltd., Chas.	Cambridge Street, Manchester	Macintosh, Manchester	Manchester, Central, 7147
Magnolia Anti-Friction Metal Co., Ltd.	49, Queen Victoria Street, London, E.C.4	Magnolier, Cannon, London	City, 6596.
Maudslay Motor Co., Ltd.	Parkside, Coventry	Maudslay, Coventry	Coventry, 110.
Mirrlees Watson Co., Ltd.	Scotland Street, Glasgow	Mirrlees, Glasgow	South Side, 1781.
Motor Rail and Tram Car Co., Ltd.	79, Lombard Street, London, E.C.3	—	Avenue, 1777.
Motor Traction	20, Tudor Street, London, E.C.4	Autocars, Fleet, London	City, 2848
Municipal Tramways Association	7, Hall Ings, Bradford	Tramways, Bradford	Bradford 2381.
Napier & Son, Ltd., D.	14, New Burlington Street, London, W.1	Nitrifier, Reg., London	Gerrard, 8926.
North British Rubber Co., Ltd.	Castle Mills, Edinburgh	Weba, Edinburgh	Edinburgh, Central, 3880
Pease & Partners, Ltd.	Tees Ironworks, Middlesbrough	Pease, Middlesbrough	Middlesbrough, 917.
Peckham Truck and Engineering Co., Ltd.	26, Budge Row, Cannon Street, London, E.C.4	Truxenpeck, London	City, 3294.
Pinchin, Johnson & Co., Ltd.	Minerva House, 26-27, Bevis Marks, London, E.C.3	Pinchin, Ald., London	Avenue, 910.
Ransomes, Sims & Jefferies, Ltd.	Orwell Works, Ipswich	Ransomes, Ipswich	Ipswich, 12.
Ruberoid Co., Ltd.	81-83, Knightrider Street, London, E.C.4	Ruberoid, Cent., London	Central, 1480
Scholey & Co., Ltd.	56, Victoria Street, London, S.W.1	Scolanco, Sowest, London	Victoria, 6663 (2 lines)
Shepherds' Parging Block Co., Ltd.	Milkstone, Rochdale	Shepherd, Milkstone, Roch-	Rochdale, 912.
Shrewsbury & Challiner Tyre Co., Ltd.	Kay Street, Ardwick Green, Manchester	Challiner, Manchester [dale	Manchester, Central, 962.
Siemens Brothers Dynamo Works, Ltd.	38 & 39, Upper Thames Street, London, E.C.4	Siemotor, Cent., London	City 5350 (9 lines).
Simplex Conduits, Ltd.	Garrison Lane, Birmingham	Economy, Birmingham	Victoria, Birmingham, 535
Simplex Rubber Co., Ltd.	Scrubbs Lane, Willesden, London, N.W.	Simplexine, Kensal, London	Willesden, 550.
Skefko Ball Bearing Co., Ltd.	Shefko Works, Luton	Skefko, Luton	Luton, 418.
Smith & Co., Frederick	Anaconda Works, Salford, Manchester	Anaconda, Manchester	Manchester, 2334.
Smith, Bros. & Hill, Ltd.	Albion Tramway Spring Works, West Bromwich	Springs, Westbromwich	West Bromwich, 125.
Spencer, Moulton & Co., Ltd., George	230, Deansgate, Manchester	Solspen, Manchester	Manchester City, 5180.
Standard Underground Cable Co.	Dock House, Billiter Street, London, E.C.3	Gramercy, London	Avenue, 5463.
Stewarts & Lloyds, Ltd.	41, Oswald Street, Glasgow	Lapweld, Glasgow	Glasgow, City, 9880.
Straker-Squire, Ltd.	Nelson Square, Blackfriars, London, S.E.1	Rhomboidal, London	Hop, 369 and 370.
"The Coventry" Chain Co., Ltd.	Spon End Works, Coventry	Chains, Coventry	Coventry, 830.
Thermit, Ltd.	675, Commercial Road, London, E.14.	Fulmen, Phone London	East, 4157.
Thornycroft & Co., Ltd.	Caxton House, Westminster, London, S.W.1	Thornycroft, London	Victoria, 8000.
Tilling-Stevens, Ltd.	Victoria Works, Maidstone	Tilling-Stevens, Maidstone	Maidstone, 117.
Titan Trackwork Co., Ltd.	Rutland Road, Sheffield	Crossings, Sheffield	Sheffield, Central, 798.
Tramways and Light Railways Association	Sanctuary Chambers, Tothill St., London, S.W.1	Tralitrayl, Vic., London	Victoria, 2110.
Tramway and Railway World	Amberley House, Norfolk Street, W.C.2	Tramigro, London	Gerrard, 2948.
Tramway Supplies, Ltd.	160, Woodhouse Lane, Leeds	Controller, Leeds	Leeds, 26883
Triplex Safety Glass Co., Ltd.	1, Albemarle Street, London, W.1	—	Regent, 1340.
Tudor Accumulator Co., Ltd.	3, Central Buildings, London, S.W.1	Subconical, London	Victoria, 2600.
Tyne Metal Co., Ltd.	Hexham-on-Tyne	Floating, Hexham	Hexham, 189.
Underground Electric Railways Co.	Electric Railway House, London, S.W.1	Underneath, Vic., London	Victoria, 6800.
United Electric Car Co., Ltd.	Preston, Lancs	Prescar, Preston	Preston, 219 and 220.
Val de Travers Asphalte Paving Co., Ltd.	Hamilton House, Bishopsgate, London, E.C.2	Traversable, Ave., London	London Wall, 7467.
Vandervell & Co., Ltd., C. A.	Warple Way, Acton, London, W.3.	Vanteria, London	Chiswick, 2000 (8 lines).
Vislok, Ltd.	3, St. Bride's House, London, E.C.4	—	Central, 8157.
Waygood-Otis, Ltd.	Falmouth Road, London, S.E.1	Waygood, Sedist, London	Hop, 4000.
Wells, A. C., & Co.	102-104, Midland Road, St. Pancras, N.W.1	Unbreakable, Kincross, Lond.	North, 341.
White Motors & Accessories, Ltd.	Concanon Road, Brixton, London, S.W.2	Genisean, London	Brixton, 565 and 566.
Williamson, Alfred	North Mill Printing Works, Ashton-under-Lyne	—	Ashton-under-Lyne, 320.
Wiseman, Ltd., Alfred	Glover Street, Birmingham	Verus, Birmingham	Victoria, B'ham, 560 & 561
Wood-Milne, Ltd.	21, Albion Street, Gaythorn, Manchester,	Wudmiln, Manchester	Manchester City, 8774.
Youngs	Ryland Street Works, Birmingham	Oldens, Birmingham	Midland, 301.
Zenith Carburetter Co., Ltd.	40-42, Newman Street, London, W.1	Zenicarbur, Ox, London,	Regent, 4812 and 4813.

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